STIC Search Report

Biotech-Chem Library

STIC Database Tracking Number: 163607

TO: Rei-Tsang Shiao
Location: 5a10 / 5c18
Art Unit: 1626
Thursday, September 01, 2005

Case Serial Number: 10/678562

From: Noble Jarrell
Location: Biotech-Chem Library
Rem 1B71
Phone: 272-2556

Noble.jarrell@uspto.gov

Search Notes

sira
Search and Information Resources Administration

FOR OFFICIAL USE ONLY *PLEASE PRINT CLEARLY*

Noble Jarrell for search

Scientific and Technical Information Center

SEARCH REQUEST FORM

Requester's Full Name: Robert (Randy) Shiao Examiner # : 7932 Date: 8/24/05
Art Unit: 1626 Phone Number: 2-0707 Serial Number: 10/678,562
Location (Bldg/Room#): REM (Mailbox #): [illegible] Results Format Preferred (circle): PAPER DISK

****

To ensure an efficient and quality search, please attach a copy of the cover sheet, claims, and abstract or fill out the following: MG

Title of Invention: [illegible]

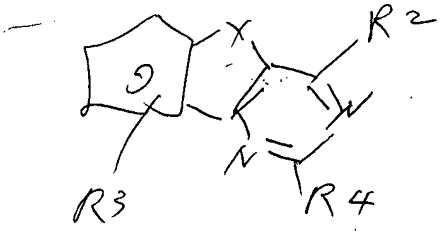
Inventors (please provide full names): Heintzelman et al

Earliest Priority Date:

Search Topic:
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known.

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

I. Search cpd I (in claim 1)



* X is C=S, C=O, CH2, CHOH,

* R2, R3, R4 are sub.

****

STAFF USE ONLY

Searcher: noble
Searcher Phone #:
Searcher Location:
Date Searcher Picked Up:
Date Completed: 9/1/05
Searcher Prep & Review Time:
Online Time: 23

Type of Search

____ NA Sequence (#)
____ AA Sequence (#)
1 Structure (#)
✓ Bibliographic
____ Litigation
____ Fulltext
____ Other

Vendors and cost where applicable

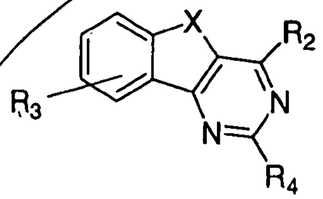
✓ STN
____ Dialog
____ Questel/Orbit
____ Lexis/Nexis
____ Westlaw
____ WWW/Internet
____ In-house sequence systems
____ Commercial
____ Oligomer
____ Score/Length
____ Interference
____ SPDI
____ Encode/Transl
____ Other (specify)

Amendments to the Claims

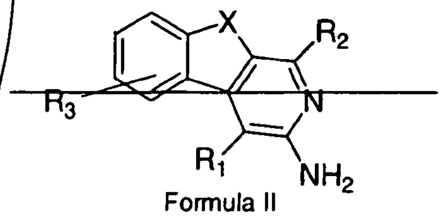
This listing of claims will replace all prior versions, and listings, of claims in the application:

What is claimed is:

1. (Currently amended) ~~A~~ compound having the structure of Formula I ~~or II~~



Formula I



~~Formula II~~

or a pharmaceutically acceptable salt thereof, wherein

~~(a) R_1 is selected from the group consisting of~~

~~(i) -COR_5, wherein R_5 is selected from H, optionally substituted C_{1-8} straight or branched chain alkyl, optionally substituted aryl and optionally substituted arylalkyl;~~

~~wherein the substituents on the alkyl, aryl and arylalkyl group are selected from C_{1-8} alkoxy, phenylacetyloxy, hydroxy, halogen, p-tosyloxy, mesyloxy, amino, cyano, carboalkoxy, or NR_7R_8 wherein R_7 and R_8 are independently selected from the group consisting of hydrogen, C_{1-8} straight or branched chain alkyl, C_{3-7} cycloalkyl, benzyl, aryl, or heteroaryl or NR_7R_8 taken together form a heterocycle or heteroaryl;~~

~~(ii) $COOR_5$, wherein R_5 is as defined above;~~

~~(ii) cyano;~~

~~(iii) -$CONR_9R_{10}$ wherein R_9 and R_{10} are independently selected from H, C_{1-8} straight or branched chain alkyl, C_{3-7} cycloalkyl, trifluoromethyl,~~

~~hydroxy, alkoxy, acyl, alkylcarbonyl, carboxyl, arylalkyl, aryl, heteroaryl and heterocyclyl;~~

~~wherein the alkyl, cycloalkyl, alkoxy, acyl, alkylcarbonyl, carboxyl, arylalkyl, aryl, heteroaryl and heterocyclyl groups may be substituted with carboxyl, alkyl, aryl, substituted aryl, heterocyclyl, substituted heterocyclyl, heteroaryl, substituted heteroaryl, hydroxamic acid, sulfonamide, sulfonyl, hydroxy, thiol, amino, alkoxy or arylalkyl, or~~ ~~R_9~~ ~~and~~ ~~R_{10}~~ ~~taken together with the nitrogen to which they are attached form a heterocycle or heteroaryl group;~~

~~(v) optionally substituted~~ ~~C_{1-8}~~ ~~straight or branched chain alkyl;~~

~~wherein the substituents on the alkyl, group are selected from~~ ~~C_{1-8}~~ ~~alkoxy, phenylacetyloxy, hydroxy, halogen, p-tosyloxy, mesyloxy, amino, cyano, carboalkoxy, carboxyl, aryl, heterocyclyl, heteroaryl, sulfonyl, thiol, alkylthio, or~~ ~~NR_7R_8~~ ~~wherein~~ ~~R_7~~ ~~and~~ ~~R_8~~ ~~are as defined above;~~

(a ~~b~~) R_2 is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl and optionally substituted C_{3-7} cycloalkyl, C_{1-8} alkoxy, aryloxy, C_{1-8} alkylsulfonyl, arylsulfonyl, arylthio, C_{1-8} alkylthio, or -$NR_{24}R_{25}$

with the proviso that the heteroaryl or heterocyclyl group is not furyl, pyridyl or thiazole,

wherein R_{24} and R_{25} are independently selected from H, C_{1-8} straight or branched chain alkyl, arylalkyl, C_{3-7} cycloalkyl, carboxyalkyl, aryl, heteroaryl, and heterocyclyl or R_{24} and R_{25} taken together with the nitrogen form a heteroaryl or heterocyclyl group,

with the proviso that the heteroaryl or heterocyclyl group is not furyl, pyridyl or thiazole,

(~~c~~b) R_3 is from one to four groups independently selected from the group consisting of:

hydrogen, halo, C_{1-8} straight or branched chain alkyl, arylalkyl, C_{3-7} cycloalkyl, C_{1-8} alkoxy, cyano, C_{1-4} carboalkoxy, trifluoromethyl, C_{1-8} alkylsulfonyl, halogen, nitro, hydroxy, trifluoromethoxy, C_{1-8} carboxylate, aryl, heteroaryl, and heterocyclyl, $-NR_{11}R_{12}$,

wherein R_{11} and R_{12} are independently selected from H, C_{1-8} straight or branched chain alkyl, arylalkyl, C_{3-7} cycloalkyl, carboxyalkyl, aryl, heteroaryl, and heterocyclyl or R_{10} and R_{11} taken together with the nitrogen form a heteroaryl or heterocyclyl group,

$-NR_{13}COR_{14}$,

wherein R_{13} is selected from hydrogen or alkyl and R_{14} is selected from hydrogen, alkyl, substituted alkyl, C_{1-3} alkoxyl, carboxyalkyl, aryl, arylalkyl, heteroaryl, heterocyclyl, $R_{15}R_{16}N(CH_2)_p-$, or $R_{15}R_{16}NCO(CH_2)_p-$, wherein R_{15} and R_{16} are independently selected from H, OH, alkyl, and alkoxy, and p is an integer from 1-6,

wherein the alkyl group may be substituted with carboxyl, alkyl, aryl, substituted aryl, heterocyclyl, substituted heterocyclyl, heteroaryl, substituted heteroaryl, hydroxamic acid, sulfonamide, sulfonyl, hydroxy, thiol, alkoxy or arylalkyl, or R_{13} and R_{14} taken together with the carbonyl form a carbonyl containing heterocyclyl group;

(~~d~~c) R_4 is selected from the group consisting of hydrogen, C_{1-6} straight or branched chain alkyl, benzyl

wherein the alkyl and benzyl groups are optionally substituted with one or more groups selected from C_{3-7} cycloalkyl, C_{1-8} alkoxy, cyano, C_{1-4} carboalkoxy, trifluoromethyl, C_{1-8} alkylsulfonyl, halogen, nitro, hydroxy, trifluoromethoxy, C_{1-8} carboxylate, amino, $NR_{17}R_{18}$, aryl and heteroaryl,

-OR_{17}, and –$NR_{17}R_{18}$,

wherein R_{17} and R_{18} are independently selected from hydrogen, and optionally substituted C_{1-6} alkyl or aryl; and

(~~e~~d) X is selected from C=S, C=O; CH_2, CHOH, $CHOR_{19}$; or $CHNR_{20}R_{21}$ where R_{19}, R_{20}, and R_{21} are selected from optionally substituted C_{1-8} straight of branched chain alkyl, wherein the substituents on the alkyl group are selected from C_{1-8} alkoxy, hydroxy, halogen, amino, cyano, or $NR_{22}R_{23}$ wherein R_{22} and R_{23} are independently selected from the group consisting of hydrogen, C_{1-8} straight or branched chain alkyl, C_{3-7} cycloalkyl, benzyl, aryl, heteroaryl, or $NR_{22}R_{23}$ taken together from a heterocycle or heteroaryl;

~~with the proviso that in a compound of Formula II when R_1 is a cyano, then R_2 is not phenyl.~~

with the proviso that one or more of X, R3 or R 4 is independently, heteroaryl or heterocyclyl, or one or more of variable X, R3 or R4 is independently substituted with heteroaryl or heterocyclyl.

2. (Original) The compound of claim 1, formula I, wherein R_4 is amino.

3. (Original) The compound of claim 1, formula I, wherein R_2 is aryl or heteroaryl.

4. (Cancelled)

5. (Cancelled)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Bib Data Sheet

CONFIRMATION NO. 2537

SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/678,562	10/03/2003 RULE	544	1626	ORT 1662-CIP.2

APPLICANTS

Geoffrey R. Heintzelman, Annandale, NJ;

James Lawrence Bullington, Hamilton Square, NJ;
Kenneth C. Rupert, South Orange, NJ;

** CONTINUING DATA *************************
This application is a CIP of 10/259,139 09/27/2002
which is a CIP of 10/123,389 04/16/2002

** FOREIGN APPLICATIONS ********************

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 12/30/2003

	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
Foreign Priority claimed ☐ yes ☒ no 35 USC 119 (a-d) conditions met ☐ yes ☒ no ☐ Met after Allowance Verified and Acknowledged Examiner's Signature Initials	NJ	0	26	1

ADDRESS
000027777
PHILIP S. JOHNSON
JOHNSON & JOHNSON
ONE JOHNSON & JOHNSON PLAZA
NEW BRUNSWICK , NJ
08933-7003

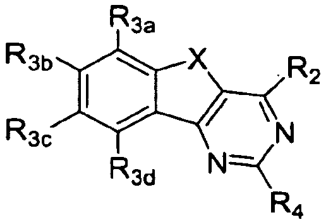
TITLE
Arylindenopyridines and arylindenopyrimidines and related therapeutic and prophylactic methods

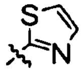
FILING FEE	FEES: Authority has been given in Paper No. _________ to charge/credit DEPOSIT ACCOUNT	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time)

mmol). The tube was heated to 75°C for 2 h before concentrating. The residue was purified by column chromatography eluting with 0-10% methanol in dichloromethane to yield 0.009 g (70%) of a yellow solid. MS m/z 402 (M^{+}+1). The productwas dissolved in a minimal amount of CH_2Cl_2 and treated with 1 N HCl in ether to obtain the hydrochloride salt.

Following the general synthetic procedures outlined above and in Examples 1-19, the compounds of Table 1 below were prepared.

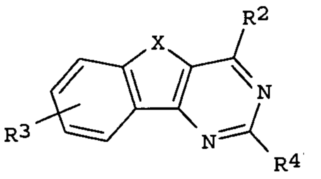
Table 1



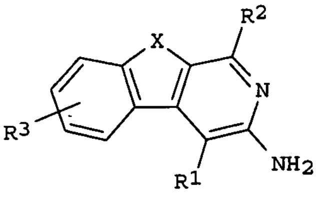
No.	R_2	R_{3a}	R_{3b}	R_{3c}	R_{3d}	R_4	X	MS (M+1)
1	4-MeOPh	H	H	H	H	NH_2	CH_2	290
2	4-MeOPh	H	H	H	H	NH_2	CO	304
3	2-furyl	H	H	H	H	NH_2	CO	264
4	2-furyl	H	H	H	H	NH_2	CH_2	250
5	3-pyridyl	H	H	H	H	NH_2	CO	297 (+Na)
6	4-pyridyl	H	H	H	H	NH_2	CO	275
7	 C_3H_2NS	H	H	H	H	NH_2	CO	281
8	4-ClC_6H_4	H	H	H	H	NH_2	CO	308

```
=> d his

     (FILE 'HOME' ENTERED AT 17:31:04 ON 01 SEP 2005)

     FILE 'HCAPLUS' ENTERED AT 17:31:08 ON 01 SEP 2005
L1            3 US2004127510/PN OR (US2003-678562# OR US2002-123389#)/AP,PRN

     FILE 'REGISTRY' ENTERED AT 17:32:14 ON 01 SEP 2005

     FILE 'HCAPLUS' ENTERED AT 17:32:14 ON 01 SEP 2005
L2              TRA L1 1- RN :       445 TERMS

     FILE 'REGISTRY' ENTERED AT 17:32:15 ON 01 SEP 2005
L3          445 SEA L2

     FILE 'WPIX' ENTERED AT 17:32:19 ON 01 SEP 2005
L4            3 L1

=> b hcap;d all l1
FILE 'HCAPLUS' ENTERED AT 17:32:47 ON 01 SEP 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)


Copyright of the articles to which records in this database refer is
held by the publishers listed in the PUBLISHER (PB) field (available
for records published or updated in Chemical Abstracts after December
26, 1996), unless otherwise indicated in the original publications.
The CA Lexicon is the copyrighted intellectual property of the
the American Chemical Society and is provided to assist you in searching
databases on STN.  Any dissemination, distribution, copying, or storing
of this information, without the prior written consent of CAS, is
strictly prohibited.

FILE COVERS 1907 - 1 Sep 2005  VOL 143 ISS 10
FILE LAST UPDATED: 31 Aug 2005  (20050831/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.


L1   ANSWER 1 OF 3  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   2004:533976  HCAPLUS
DN   141:89097
ED   Entered STN:  02 Jul 2004
TI   Preparation of arylindenopyridines and arylindenopyrimidines as adenosine
     A2a receptor antagonists
IN   Heintzelman, Geoffrey R.; Bullington, James Lawrence; Rupert, Kenneth C.
PA   USA
SO   U.S. Pat. Appl. Publ., 23 pp., Cont.-in-part of U.S. Ser. No. 259,139.
     CODEN: USXXCO
DT   Patent
LA   English
IC   ICM  A61K031-519
     ICS  A61K031-4745; C07D487-02; C07D471-02
INCL 514267000; 514291000; 544250000; 546080000
CC   28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
     Section cross-reference(s): 1, 63
FAN.CNT 5
     PATENT NO.          KIND  DATE       APPLICATION NO.       DATE
     ---------------     ----  --------   --------------------  --------
PI   US 2004127510        A1   20040701   US 2003-678562        20031003 <--
```

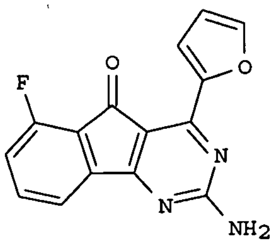
```
     US 2003212089        A1     20031113    US 2002-123389          20020416 <--
     US 2004082578        A1     20040429    US 2002-259139          20020927 <--
     US 6903109           B2     20050607
PRAI US 2002-123389       A2     20020416  <--
     US 2002-259139       A2     20020927
     US 2001-284465P      P      20010418
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 --------------  -----  ----------------------------------------------
 US 2004127510   ICM    A61K031-519
                 ICS    A61K031-4745; C07D487-02; C07D471-02
                 INCL   514267000; 514291000; 544250000; 546080000
 US 2004127510   NCL    514/267.000
                 ECLA   C07D221/16; C07D401/04+221+213; C07D401/04+221+215;
                        C07D401/04+241B+221; C07D401/12+233+221;
                        C07D405/04+307B+221; C07D405/04+317+221;
                        C07D405/04+319+221; C07D409/04+333B+221;
                        C07D491/04+307B+221B                              <--
 US 2003212089   NCL    514/290.000
                 ECLA   C07D221/16; C07D401/04+221+215; C07D401/04+221+213;
                        C07D401/04+241B+221; C07D401/12+233+221;
                        C07D405/04+307B+221; C07D405/04+319+221;
                        C07D405/04+317+221; C07D409/04+333B+221;
                        C07D491/04+307B+221B                              <--
 US 2004082578   NCL    514/232.800
                 ECLA   C07D221/16; C07D401/04+221+215; C07D401/04+221+213;
                        C07D401/04+241B+221; C07D401/12+233+221;
                        C07D405/04+307B+221; C07D405/04+319+221;
                        C07D405/04+317+221; C07D409/04+333B+221;
                        C07D491/04+307B+221B                              <--
OS   MARPAT 141:89097
GI
```



I



II



III

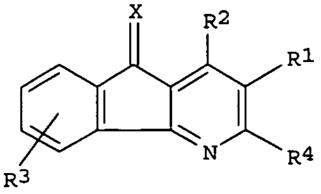
AB   The title compds. [I or II; R1 = COR5 (wherein R5 = H, alkyl, aryl, arylalkyl), CO2R5, CN, etc.; R2 = alkyl, aryl, heteroaryl, etc.; R3 = H, halo, alkyl, etc.; R4 = H, alkyl, CH2Ph, etc.; X = CS, CO, CH2, (un)substituted CHOH], useful for treating disorders ameliorated by antagonizing adenosine A2a receptors (biol. data given), were prepared Syntheses of compds. I are described in 19 synthetic examples. E.g., a 2-step synthesis of III, was given. This invention also provides

```
     therapeutic and prophylactic methods using the instant compds. and
     pharmaceutical compns.
ST   arylindenopyridine arylindenopyrimidine prepn adenosine A2a receptor
     antagonist
IT   Adenosine receptors
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (A2A; preparation of arylindenopyridines and arylindenopyrimidines as
        adenosine A2a receptor antagonists)
IT   Nervous system, disease
        (Huntington's chorea, treatment or prevention of; preparation of
        arylindenopyridines and arylindenopyrimidines as adenosine A2a receptor
        antagonists)
IT   Nervous system, disease
        (degeneration, treatment or prevention of; preparation of
        arylindenopyridines and arylindenopyrimidines as adenosine A2a receptor
        antagonists)
IT   Nervous system, disease
        (multiple system atrophy, treatment or prevention of; preparation of
        arylindenopyridines and arylindenopyrimidines as adenosine A2a receptor
        antagonists)
IT   Anti-Alzheimer's agents
     Antiparkinsonian agents
     Human
     Nervous system agents
        (preparation of arylindenopyridines and arylindenopyrimidines as adenosine
        A2a receptor antagonists)
IT   Mental disorder
        (senile psychosis, treatment or prevention of; preparation of
        arylindenopyridines and arylindenopyrimidines as adenosine A2a receptor
        antagonists)
IT   Alzheimer's disease
     Movement disorders
     Parkinson's disease
        (treatment or prevention of; preparation of arylindenopyridines and
        arylindenopyrimidines as adenosine A2a receptor antagonists)
IT   70760-90-6P   110117-36-7P   110117-45-8P   439277-04-0P   713514-51-3P
     713514-52-4P   713514-53-5P   713514-54-6P   713514-55-7P   713514-56-8P
     713514-57-9P   713514-58-0P   713514-59-1P   713514-60-4P   713514-61-5P
     713514-62-6P   713514-63-7P   713514-64-8P   713514-65-9P   713514-66-0P
     713514-67-1P   713514-68-2P   713514-69-3P   713514-70-6P   713514-71-7P
     713514-72-8P   713514-73-9P   713514-74-0P   713514-75-1P   713514-76-2P
     713514-77-3P   713514-78-4P   713514-79-5P   713514-80-8P   713514-81-9P
     713514-82-0P   713514-83-1P   713514-84-2P   713514-85-3P   713514-86-4P
     713514-88-6P   713514-89-7P   713514-90-0P   713514-91-1P   713514-92-2P
     713514-93-3P   713514-94-4P   713514-95-5P   713514-96-6P   713514-97-7P
     713514-98-8P   713514-99-9P   713515-00-5P   713515-01-6P   713515-02-7P
     713515-03-8P   713515-04-9P   713515-05-0P   713515-06-1P   713515-07-2P
     713515-08-3P   713515-09-4P   713515-10-7P   713515-11-8P   713515-12-9P
     713515-13-0P   713515-14-1P   713515-15-2P   713515-16-3P   713515-17-4P
     713515-18-5P   713515-19-6P   713515-20-9P   713515-21-0P   713515-22-1P
     713515-23-2P   713515-24-3P   713515-25-4P   713515-26-5P   713515-27-6P
     713515-28-7P   713515-29-8P   713515-30-1P   713515-31-2P   713515-32-3P
     713515-33-4P   713515-34-5P   713515-35-6P   713515-36-7P   713515-37-8P
     713515-38-9P   713515-39-0P   713515-40-3P   713515-41-4P   713515-42-5P
     713515-43-6P   713515-44-7P   713515-45-8P   713515-46-9P   713515-47-0P
     713515-58-3P
     RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU
     (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
     (Uses)
        (preparation of arylindenopyridines and arylindenopyrimidines as adenosine
        A2a receptor antagonists)
IT   50-01-1, Guanidine hydrochloride   62-53-3, Aniline, reactions   98-01-1,
     2-Furaldehyde, reactions   106-95-6, Allyl bromide, reactions   109-01-3,
     N-Methylpiperazine   109-64-8, 1,3-Dibromopropane   110-00-9, Furan
     110-91-8, Morpholine, reactions   142-25-6, N,N,N'-
     Trimethylethylenediamine   762-42-5, Dimethyl acetylenedicarboxylate
     1080-74-6   4584-46-7, 2-(Dimethylamino)ethyl chloride hydrochloride
     34381-71-0, (S)-1-Methyl-2-pyrrolidinemethanol   100224-74-6, Guanidine
     carbonate   713515-57-2
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (preparation of arylindenopyridines and arylindenopyrimidines as adenosine
        A2a receptor antagonists)
IT   75135-41-0P   713514-87-5P   713515-48-1P   713515-49-2P   713515-50-5P
     713515-51-6P   713515-52-7P   713515-53-8P   713515-54-9P   713515-55-0P
     713515-56-1P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation of arylindenopyridines and arylindenopyrimidines as adenosine
        A2a receptor antagonists)


=> d all l1 2-3

L1   ANSWER 2 OF 3  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   2004:353146  HCAPLUS
DN   140:375085
ED   Entered STN:  30 Apr 2004
TI   Preparation of arylindenopyridines as phosphodiesterase inhibitors and
     adenosine A2a receptor antagonists
IN   Heintzelman, Geoffrey R.; Averill, Kristin M.; Dodd, John H.; Demarest,
     Keith T.; Tang, Yuting; Jackson, Paul F.
PA   Ortho-Muniel Pharmaceutical, Inc., USA
SO   U.S. Pat. Appl. Publ., 136 pp., Cont.-in-part of U.S. Pat. Appl. 2003
     212,089.
     CODEN: USXXCO
DT   Patent
LA   English
IC   ICM  A61K031-5377
     ICS  A61K031-496; A61K031-473; C07D413-02; C07D221-22; C07D043-02
INCL 514232800; 514253030; 514290000; 544126000; 544361000; 546079000
CC   27-18 (Heterocyclic Compounds (One Hetero Atom))
     Section cross-reference(s): 1, 63
FAN.CNT 5
     PATENT NO.          KIND   DATE         APPLICATION NO.        DATE
     ---------------     ----   --------     --------------------   --------
PI   US 2004082578        A1    20040429     US 2002-259139         20020927 <--
     US 6903109           B2    20050607
     US 2003212089        A1    20031113     US 2002-123389         20020416 <--
     US 2004127510        A1    20040701     US 2003-678562         20031003 <--
PRAI US 2001-284465P      P     20010418
     US 2002-123389       A2    20020416  <--
     US 2002-259139       A2    20020927
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------   -----  -----------------------------------------------
 US 2004082578   ICM    A61K031-5377
                 ICS    A61K031-496; A61K031-473; C07D413-02; C07D221-22;
                        C07D043-02
                 INCL   514232800; 514253030; 514290000; 544126000; 544361000;
                        546079000
 US 2004082578   NCL    514/232.800
                 ECLA   C07D221/16; C07D401/04+221+215; C07D401/04+221+213;
                        C07D401/04+241B+221; C07D401/12+233+221;
                        C07D405/04+307B+221; C07D405/04+319+221;
                        C07D405/04+317+221; C07D409/04+333B+221;
                        C07D491/04+307B+221B                              <--
 US 2003212089   NCL    514/290.000
                 ECLA   C07D221/16; C07D401/04+221+215; C07D401/04+221+213;
                        C07D401/04+241B+221; C07D401/12+233+221;
                        C07D405/04+307B+221; C07D405/04+319+221;
                        C07D405/04+317+221; C07D409/04+333B+221;
                        C07D491/04+307B+221B                              <--
```

US 2004127510 NCL 514/267.000
ECLA C07D221/16; C07D401/04+221+213; C07D401/04+221+215; C07D401/04+241B+221; C07D401/12+233+221; C07D405/04+307B+221; C07D405/04+317+221; C07D405/04+319+221; C07D409/04+333B+221; C07D491/04+307B+221B <--

OS MARPAT 140:375085

GI



I

AB This invention provides novel arylindenopyridines (shown as I; variables defined below and/or in claims; e.g. 4-(3,5-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid Me ester), and pharmaceutical compns. comprising same, useful for treating disorders ameliorated by antagonizing adenosine A2a receptors or by reducing phosphodiesterase (PDE) activity in appropriate cells. I are potent small mol. phosphodiesterase inhibitors that have demonstrated potency for inhibition of PDE7, PDE5, and PDE4; some I are potent small mol. PDE7 inhibitors that have also demonstrated good selectivity against PDE5 and PDE4; data are provided for about 30 I. I are also antagonists of the adenosine A2a receptors that have demonstrated potency for the antagonism of adenosine A2a, A1, and A3 receptors; data are provided for about 45 I. This invention also provides therapeutic and prophylactic methods using the instant pharmaceutical compns. Although the methods of preparation are not claimed, 23 example prepns. of intermediates and I are included; mass spectral data are tabulated for 284 examples of I. In I: R1 = COR5, COOR6, CN, a lactone or lactam formed with R4, CONR7R8; R2 = (un)substituted alkyl, aryl, heteroaryl, heterocyclyl, cycloalkyl; R3 = H, halo, alkyl, arylalkyl, cycloalkyl, alkoxy, CN, carboalkoxy, CF3, alkylsulfonyl, NO2, OH, OCF3, carboxylate, aryl, heteroaryl, heterocyclyl; NR10R11; NR12COR13; R4 = H, alkyl, benzyl, NR13R14; X = S, O; R5, R6 = H, alkyl, aryl, arylalkyl; R7, R8 = H, alkyl, cycloalkyl, etc.; R10, R11 = H, alkyl, arylalkyl, etc.; R12, R14 = H, alkyl; R13 = H, alkyl, alkoxy, etc.

ST arylindenopyridine prepn phosphodiesterase inhibitor adenosine A2a receptor antagonist; indenopyridine aryl prepn phosphodiesterase inhibitor adenosine A2a receptor antagonist

IT Adenosine receptors
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(A2A; preparation of arylindenopyridines for treating disorder ameliorated by antagonizing adenosine A2a receptors)

IT Nervous system, disease
(Huntington's chorea; preparation of arylindenopyridines for treating disorder ameliorated by antagonizing adenosine A2a receptors)

IT Brain, disease
(degeneration, corticobasal degeneration; preparation of arylindenopyridines for treating disorder ameliorated by antagonizing adenosine A2a receptors)

IT Gastrointestinal motility
(disorder, dysmotility; preparation of arylindenopyridines as phosphodiesterase inhibitors with therapeutic uses)

IT Allergy
(hypersensitivity; preparation of arylindenopyridines as phosphodiesterase inhibitors with therapeutic uses)

IT Sexual behavior
(impotence; preparation of arylindenopyridines as phosphodiesterase

```
         inhibitors with therapeutic uses)
IT    Intestine, disease
         (inflammatory; preparation of arylindenopyridines as phosphodiesterase
         inhibitors with therapeutic uses)
IT    Nervous system, disease
         (multiple system atrophy; preparation of arylindenopyridines for treating
         disorder ameliorated by antagonizing adenosine A2a receptors)
IT    Parturition
         (premature; preparation of arylindenopyridines as phosphodiesterase
         inhibitors with therapeutic uses)
IT    AIDS (disease)
      Allergy
      Allergy inhibitors
      Anti-AIDS agents
      Anti-inflammatory agents
      Antiarthritics
      Antiasthmatics
      Antiglaucoma agents
      Arthritis
      Asthma
      Blood vessel, disease
      Cardiovascular agents
      Cardiovascular system, disease
      Dysmenorrhea
      Glaucoma (disease)
      Human
      Immunomodulators
      Inflammation
      Psoriasis
      Urinary tract, disease
         (preparation of arylindenopyridines as phosphodiesterase inhibitors with
         therapeutic uses)
IT    Alzheimer's disease
      Anti-Alzheimer's agents
      Antiparkinsonian agents
      Movement disorders
      Nervous system agents
      Parkinson's disease
         (preparation of arylindenopyridines for treating disorder ameliorated by
         antagonizing adenosine A2a receptors)
IT    Mental disorder
         (senile psychosis; preparation of arylindenopyridines for treating disorder
         ameliorated by antagonizing adenosine A2a receptors)
IT    Bronchi, disease
      Esophagus, disease
         (spasm; preparation of arylindenopyridines as phosphodiesterase inhibitors
         with therapeutic uses)
IT    Insecta
         (stinging, bee sting; preparation of arylindenopyridines as
         phosphodiesterase inhibitors with therapeutic uses)
IT    Brain, disease
         (stroke; preparation of arylindenopyridines as phosphodiesterase inhibitors
         with therapeutic uses)
IT    Transplant and Transplantation
         (transplant-related disorder; preparation of arylindenopyridines as
         phosphodiesterase inhibitors with therapeutic uses)
IT    9036-21-9
      RL: BSU (Biological study, unclassified); BIOL (Biological study)
         (IV; preparation of arylindenopyridines as phosphodiesterase inhibitors with
         therapeutic uses)
IT    68063-31-0P, 3-(Ethoxycarbonyl)-4-phenyl-2-methyl-5-oxo-5H-indeno[1,2-
      b]pyridine   77948-15-3P, 3-(Ethoxycarbonyl)-4-(4-nitrophenyl)-2-methyl-5-
      oxo-5H-indeno[1,2-b]pyridine   105244-36-8P, 3-(Ethoxycarbonyl)-4-(4-
      methoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine   128691-56-5P,
      3-(Methoxycarbonyl)-4-(2-methoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-
      b]pyridine   373376-73-9P, 3-(Ethoxycarbonyl)-4-(2,5-dimethoxyphenyl)-2-
```

methyl-5-oxo-5H-indeno[1,2-b]pyridine 439108-77-7P, 3-Cyano-4-(benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 439137-49-2P, 3-(Ethoxycarbonyl)-4-(4-methylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 445221-30-7P, 3-(Ethoxycarbonyl)-4-(3,4,5-trimethoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474061-77-3P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-5-oxo-7,8-dichloro-5H-indeno[1,2-b]pyridine 474061-81-9P, Methyl 4-(4-methyl-1-naphthyl)-2-methyl-5-oxo-8-nitro-5H-indeno[1,2-b]pyridine-3-carboxylate 474061-83-1P, 3-(Methoxycarbonyl)-4-cyclohexyl-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474061-85-3P, 3-(Methoxycarbonyl)-4-(4-(dimethylamino)phenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474061-88-6P, 3-((Methylamino)carbonyl)-4-(2,4-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474061-89-7P, 3-(Ethoxycarbonyl)-4-(4-nitrophenyl)-2-amino-5-oxo-5H-indeno[1,2-b]pyridine 474061-93-3P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-7-((3-carboxypropanoyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474061-95-5P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-7-((2-carboxyethyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474061-96-6P, 3-(Methoxycarbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-7-((3-((hydroxyamino)carbonyl)propanoyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474061-98-8P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-7-((hydroxyacetyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474061-99-9P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-7-((morpholinoacetyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474062-00-5P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-7-(2-oxopiperazino)-5-oxo-5H-indeno[1,2-b]pyridine 474062-02-7P, 3-(Methoxycarbonyl)-4-((methyl)(phenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-04-9P, 3-(Methoxycarbonyl)-4-(cyclopentylamino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-06-1P, 3-(Ethoxycarbonyl)-4-(benzodioxol-5-yl)-2-methyl-5-oxo-7-(acetylamino)-5H-indeno[1,2-b]pyridine 474062-08-3P, 4-(3,5-Dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid methyl ester 474062-09-4P, 3-(Ethoxycarbonyl)-4-(benzodioxol-5-yl)-2-methyl-5-oxo-8-(acetylamino)-5H-indeno[1,2-b]pyridine 474062-10-7P, 4-(3,5-Dibromo-4-hydroxyphenyl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid methyl ester 474062-11-8P, 7,8-Dichloro-4-(3,5-dibromo-4-hydroxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid methyl ester 474062-12-9P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-8-((3-carboxypropanoyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474062-13-0P, 3-(Methoxycarbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-8-((3-carboxypropanoyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474062-14-1P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-8-((3-((hydroxyamino)carbonyl)propanoyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474062-15-2P, 4-(3,5-Dimethylphenyl)-8-[[[(2-hydroxyethyl)amino]acetyl]amino]-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid methyl ester 474062-16-3P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-8-((4-carboxybutanoyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474062-17-4P, 4-(3,5-Dimethylphenyl)-8-[[[(2-hydroxyethyl)methylamino]acetyl]amino]-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid methyl ester 474062-18-5P, 4-(3,5-Dimethylphenyl)-2-methyl-8-[(4-morpholinylacetyl)amino]-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid methyl ester 474062-19-6P, 4-(3,5-Dimethylphenyl)-2-methyl-5-oxo-8-[(1-piperazinylacetyl)amino]-5H-indeno[1,2-b]pyridine-3-carboxylic acid methyl ester 474062-20-9P, 3-(Ethoxycarbonyl)-4-(benzodioxol-5-yl)-2-amino-5-oxo-5H-indeno[1,2-b]pyridine 474062-21-0P, 4-(6-Bromo-1,3-benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid ethyl ester 474062-22-1P, 3-(Methoxycarbonyl)-4-(6-bromobenzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-23-2P, 2-Methyl-4-(3-methylphenyl)-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid methyl ester 474062-24-3P, 7-Bromo-4-(3,5-dibromo-4-hydroxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid methyl ester 474062-25-4P, 8-Bromo-4-(3,5-dibromo-4-hydroxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylic acid methyl ester 474062-26-5P, 3-(Ethoxycarbonyl)-4-(benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-27-6P, 3-((tert-Butoxy)carbonyl)-4-(benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-28-7P, 3-((tert-Butoxy)carbonyl)-4-(3,4-dimethoxyphenyl)-2-methyl-5-oxo-5Hindeno[1,2-b]pyridine 474062-29-8P, 3-Carboxy-4-(benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-31-2P, 3-(Ethoxycarbonyl)-4-(4-(benzyloxy)-3-methoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-32-3P, 3-(Ethoxycarbonyl)-4-(3-bromo-4,5-dimethoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-33-4P 474062-34-5P, 3-Carboxy-4-(3,4-dimethoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-35-6P, 3-(Ethoxycarbonyl)-4-(3-bromo-4,5-dihydroxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-36-7P, 3-((Benzyloxy)carbonyl)-4-(benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-37-8P, 3-((2-((Benzyl)(methyl)amino)ethoxy)carbonyl)-4-(benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-38-9P, 3-(Methoxycarbonyl)-4-(3,4-dimethoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-39-0P, 3-(Methoxycarbonyl)-4-(benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-40-3P, 3-(Ethoxycarbonyl)-4-(2,4-dimethoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-41-4P, 3-(Ethoxycarbonyl)-4-(5-bromo-2-methoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-42-5P, 3-(Ethoxycarbonyl)-4-(benzodioxol-4-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-43-6P, 3-(Ethoxycarbonyl)-4-(3,4-dimethoxyphenyl)-2-amino-5-oxo-5H-indeno[1,2-b]pyridine 474062-44-7P, 3-(Ethoxycarbonyl)-4-phenyl-2-amino-5-oxo-5H-indeno[1,2-b]pyridine 474062-45-8P, 3-(Ethoxycarbonyl)-4-(4-methoxy-2,3-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-46-9P, 3-(Ethoxycarbonyl)-4-(4-bromo-3,5-dimethoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-47-0P, 3-(Methoxycarbonyl)-4-phenyl-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-48-1P, 3-(Ethoxycarbonyl)-4-(2,3-dihydro-1,4-benzodioxin-6-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-49-2P, 3-(Ethoxycarbonyl)-4-(benzodioxol-5-yl)-2-methyl-7-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474062-50-5P, 3-((2-Cyanoethoxy)carbonyl)-4-(benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-51-6P, 3-(Ethoxycarbonyl)-4-(6-nitrobenzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-52-7P, 3-(Ethoxycarbonyl)-4-(benzodioxol-5-yl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474062-53-8P, 3-(Methoxycarbonyl)-4-(3-(trifluoromethyl)phenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-54-9P, 3-(Ethoxycarbonyl)-4-(benzodioxol-5-yl)-2-methyl-8-amino-5-oxo-5H-indeno[1,2-b]pyridine 474062-55-0P, 3-(Aminocarbonyl)-4-(benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-56-1P, 3-(Ethoxycarbonyl)-4-(2,4-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-57-2P, 3-(Ethoxycarbonyl)-4-(2-furyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-58-3P, 3-(Ethoxycarbonyl)-4-(2-thienyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-59-4P, 3-(Methoxycarbonyl)-4-(2,4-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-60-7P, 3-(Methoxycarbonyl)-4-(2,3-dihydro-1,4-benzodioxin-6-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-61-8P, 3-(Methoxycarbonyl)-4-(6-nitrobenzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-62-9P, 3-(Methoxycarbonyl)-4-(4-methoxy-2,3-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-63-0P 474062-64-1P, 3-(Methoxycarbonyl)-4-(benzodioxol-4-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-65-2P, 3-(Methoxycarbonyl)-4-(3-bromo-6-methoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-66-3P, 3-(Ethoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-67-4P, 3-(Methoxycarbonyl)-4-(4-methoxy-1-naphthyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-68-5P, 3-(Methoxycarbonyl)-4-(4-nitrophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-69-6P, 3-(Ethoxycarbonyl)-4-(3-methylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-70-9P, 3-(Ethoxycarbonyl)-4-(2-methylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-71-0P, 3-(Ethoxycarbonyl)-4-(3-(trifluoromethyl)phenyl)-2-methyl-5-oxo-7-nitro-5H-indeno[1,2-b]pyridine 474062-72-1P, 3-(Ethoxycarbonyl)-4-(3-(trifluoromethyl)phenyl)-2-methyl-5-oxo-8-nitro-5H-indeno[1,2-b]pyridine 474062-73-2P, 3-(Methoxycarbonyl)-4-(2-methylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-74-3P, 3-(Ethoxycarbonyl)-4-(3-(trifluoromethyl)phenyl)-2-methyl-5-oxo-7-amino-5H-indeno[1,2-b]pyridine 474062-75-4P, 3-(Ethoxycarbonyl)-4-(3-(trifluoromethyl)phenyl)-2-methyl-5-oxo-8-amino-5H-indeno[1,2-b]pyridine 474062-76-5P, 3-(Methoxycarbonyl)-4-(3,5-bis(trifluoromethyl)phenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474062-77-6P, 3-(Methoxycarbonyl)-4-(4-methylphenyl)-2-methyl-5-oxo-5H-

indeno[1,2-b]pyridine 474062-78-7P, 3-(Methoxycarbonyl)-4-(3-
(trifluoromethyl)phenyl)-2-methyl-5-oxo-7-nitro-5H-indeno[1,2-b]pyridine
474062-79-8P, 3-(Methoxycarbonyl)-4-(3-(trifluoromethyl)phenyl)-2-methyl-5-
oxo-8-nitro-5H-indeno[1,2-b]pyridine 474062-80-1P, 3-(Ethoxycarbonyl)-4-
(2,4-dimethylphenyl)-2-isopropyl-5-oxo-5H-indeno[1,2-b]pyridine
474062-81-2P, 3-(Methoxycarbonyl)-4-(3-(trifluoromethyl)phenyl)-2-methyl-5-
oxo-7-amino-5H-indeno[1,2-b]pyridine 474062-82-3P, 3-(Methoxycarbonyl)-4-
(3,5-dichlorophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine
474062-83-4P, 3-(Methoxycarbonyl)-4-(2,4-dimethylphenyl)-2-ethyl-5-oxo-5H-
indeno[1,2-b]pyridine 474062-84-5P, 3-(Methoxycarbonyl)-4-(4-
(trifluoromethyl)phenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine
474062-85-6P 474062-86-7P, Methyl 4-(4-isopropylphenyl)-2-methyl-5-oxo-
5H-indeno[1,2-b]pyridine-3-carboxylate 474062-87-8P, Methyl
4-(3,5-dimethylphenyl)-2-methyl-5-oxo-7-nitro-5H-indeno[1,2-b]pyridine-3-
carboxylate 474062-88-9P, Methyl 4-(3,5-dimethylphenyl)-2-methyl-5-oxo-8-
nitro-5H-indeno[1,2-b]pyridine-3-carboxylate 474062-89-0P
474062-90-3P, Methyl 4-(3-(trifluoromethyl)phenyl)-2-methyl-5-oxo-7-
(acetylamino)-5H-indeno[1,2-b]pyridine-3-carboxylate 474062-91-4P,
Methyl 4-(3,5-dibromophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-
carboxylate 474062-92-5P, Methyl 4-(3,5-dimethylphenyl)-2-methyl-5-oxo-8-
amino-5H-indeno[1,2-b]pyridine-3-carboxylate 474062-93-6P, Methyl
4-(3-fluoro-2-methylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-
carboxylate 474062-94-7P, Methyl 4-(3-bromophenyl)-2-methyl-5-oxo-5H-
indeno[1,2-b]pyridine-3-carboxylate 474062-95-8P, Methyl
4-(1-naphthyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-carboxylate
474062-96-9P, Methyl 4-(phenanthren-9-yl)-2-methyl-5-oxo-5H-indeno[1,2-
b]pyridine-3-carboxylate 474062-97-0P 474062-98-1P,
3-Cyano-4-(2,4-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine
474062-99-2P, 3-(Methoxycarbonyl)-4-(2,4-dimethylphenyl)-2-amino-5-oxo-5H-
indeno[1,2-b]pyridine 474063-00-8P, 3-(Methoxycarbonyl)-4-(4-methyl-1-
naphthyl)-2-amino-5-oxo-5H-indeno[1,2-b]pyridine 474063-01-9P,
3-((2-Cyanoethoxy)carbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-5-oxo-5H-
indeno[1,2-b]pyridine 474063-02-0P, 3-Cyano-4-(4-methyl-1-naphthyl)-2-
methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-03-1P 474063-04-2P
474063-05-3P 474063-06-4P 474063-07-5P 474063-08-6P 474063-09-7P,
3-Carboxy-4-(4-methyl-1-naphthyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine
474063-10-0P, 3-(Aminocarbonyl)-4-(2,4-dimethylphenyl)-2-methyl-5-oxo-5H-
indeno[1,2-b]pyridine 474063-11-1P, 3-((Dimethylamino)carbonyl)-4-(2,4-
dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-12-2P
474063-13-3P 474063-14-4P 474063-15-5P 474063-16-6P,
3-(Methoxycarbonyl)-4-(2-nitrophenyl)-2-methyl-5-oxo-5H-indeno[1,2-
b]pyridine 474063-17-7P 474063-18-8P, 3-(Aminocarbonyl)-4-(4-methyl-1-
naphthyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-19-9P
474063-20-2P, 3-(Methoxycarbonyl)-4-(3-nitrophenyl)-2-methyl-5-oxo-5H-
indeno[1,2-b]pyridine 474063-21-3P, 3-((Methylamino)carbonyl)-4-(4-
methyl-1-naphthyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-22-4P,
3-((Dimethylamino)carbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-5-oxo-5H-
indeno[1,2-b]pyridine 474063-23-5P, 3-(Methoxycarbonyl)-4-(4-quinolinyl)-
2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-24-6P,
3-(Methoxycarbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-5-oxo-7,8-dichloro-5H-
indeno[1,2-b]pyridine 474063-25-7P, 3-(Methoxycarbonyl)-4-(3-quinolinyl)-
2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-26-8P,
3-(Ethoxycarbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-5-oxo-5H-indeno[1,2-
b]pyridine 474063-27-9P, 3-(Methoxycarbonyl)-4-(3,5-dibromophenyl)-2-
methyl-5-oxo-7,8-dichloro-5H-indeno[1,2-b]pyridine 474063-28-0P,
3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-6,9-dichloro-5-oxo-5H-
indeno[1,2-b]pyridine 474063-29-1P, Methyl 4-(6-
(hydroxylamino)benzodioxol-5-yl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine-3-
carboxylate N-oxide 474063-30-4P, 3-(Methoxycarbonyl)-4-(3,5-
dibromophenyl)-2-methyl-6,9-dichloro-5-oxo-5H-indeno[1,2-b]pyridine
474063-31-5P, 3-(Methoxycarbonyl)-4-(3-methyl-2-pyridyl)-2-methyl-5-oxo-5H-
indeno[1,2-b]pyridine 474063-32-6P, 3-(Ethoxycarbonyl)-4-(4-methyl-1-
naphthyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine
474063-33-7P, 3-(Methoxycarbonyl)-4-(2-amino-3,5-dibromophenyl)-2-methyl-5-
oxo-5H-indeno[1,2-b]pyridine 474063-34-8P, 3-Acetyl-4-(3,5-
dibromophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-35-9P,

3-Acetyl-4-(3,5-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-36-0P, 3-(Methoxycarbonyl)-4-(3-pyridyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-37-1P, 3-((2-Cyanoethoxy)carbonyl)-4-(3,5-dibromophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-38-2P, 3-((2-Cyanoethoxy)carbonyl)-4-(3,5-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-39-3P, 3-(Methoxycarbonyl)-4-(3,4-dihydroxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-40-6P, 3-Carboxy-4-(3,5-dibromophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-41-7P, 3-Carboxy-4-(3,5-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-42-8P, 3-(Methoxycarbonyl)-4-(3-hydroxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-43-9P, 3-(Methoxycarbonyl)-4-(2-naphthyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-44-0P, 3-(Methoxycarbonyl)-4-(4-((decyl)oxy)phenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-45-1P, 3-(Methoxycarbonyl)-4-(3-(benzyloxy)phenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-46-2P, 3-(Methoxycarbonyl)-4-(3,5-dibromo-2-methoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-48-4P, 3-((2-Cyanoethoxy)carbonyl)-4-(3,5-dibromo-2-methoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-50-8P, 7,8-Dichloro-3-((2-cyanoethoxy)carbonyl)-4-(3,5-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-52-0P, 3-(Ethoxycarbonyl)-4-(phenylamino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-55-3P, 3-(Methoxycarbonyl)-4-(3,5-dibromo-4-hydroxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-57-5P, 3-((2-Cyanoethoxy)carbonyl)-4-(3-quinolinyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-59-7P, 3-((2-Cyanoethoxy)carbonyl)-4-(2-hydroxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-61-1P, 3-((Methoxyamino)carbonyl)-4-(3,5-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-63-3P, 3-((2-Cyanoethoxy)carbonyl)-4-(3,5-dibromophenyl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474063-65-5P, 3-(Methoxycarbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-5-oxo-7-bromo-5H-indeno[1,2-b]pyridine 474063-66-6P, 3-(Methoxycarbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-5-oxo-8-bromo-5H-indeno[1,2-b]pyridine 474063-68-8P, 3-((2-Cyanoethoxy)carbonyl)-4-(4-quinolinyl)-2-methyl-5-oxo-7,8-dichloro-5H-indeno[1,2-b]pyridine 474063-70-2P, 3-((2-Cyanoethoxy)carbonyl)-4-(3,5-dibromo-4-hydroxyphenyl)-2-methyl-5-oxo-8-nitro-5H-indeno[1,2-b]pyridine 474063-72-4P, 3-((2-Cyanoethoxy)carbonyl)-4-(4-quinolinyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-74-6P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-5-oxo-7-bromo-5H-indeno[1,2-b]pyridine 474063-76-8P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-5-oxo-8-bromo-5H-indeno[1,2-b]pyridine 474063-78-0P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-5-oxo-7,8-dibromo-5H-indeno[1,2-b]pyridine 474063-80-4P, 3-((2-Cyanoethoxy)carbonyl)-4-(3,5-dibromophenyl)-2-methyl-5-oxo-7,8-dichloro-5H-indeno[1,2-b]pyridine 474063-82-6P, 3-((2-Hydroxyethoxy)carbonyl)-4-(4-quinolinyl)-2-methyl-5-oxo-7,8-dichloro-5H-indeno[1,2-b]pyridine 474063-84-8P, 3-(Methoxycarbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-7,8-dibromo-5-oxo-5H-indeno[1,2-b]pyridine 474063-86-0P, 3-(Ethoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-7,8-dibromo-5-oxo-5H-indeno[1,2-b]pyridine 474063-87-1P, 3-(Methoxycarbonyl)-4-(3,5-dibromo-4-hydroxyphenyl)-2-methyl-6,9-difluoro-5-oxo-5H-indeno[1,2-b]pyridine 474063-88-2P, 3-((2-Cyanoethoxy)carbonyl)-4-(3,5-dimethylphenyl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474063-90-6P, 3-((2-Cyanoethoxy)carbonyl)-4-(3,5-dimethylphenyl)-2-methyl-7-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474063-92-8P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-6,9-difluoro-5-oxo-5H-indeno[1,2-b]pyridine 474063-94-0P, 3-((2-Cyanoethoxy)carbonyl)-4-(3,5-dimethylphenyl)-2-methyl-6,9-difluoro-5-oxo-5H-indeno[1,2-b]pyridine 474063-96-2P, 3-(Methoxycarbonyl)-4-(3,5-dimethoxyphenyl)-2-methyl-7,8-dibromo-5-oxo-5H-indeno[1,2-b]pyridine 474063-98-4P, 3-(Methoxycarbonyl)-4-(4-cyanophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474063-99-5P, 3-(Methoxycarbonyl)-4-(4-hydroxy-3,5-dimethylphenyl)-2-methyl-7-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474064-01-2P, 3-(Methoxycarbonyl)-4-(4-hydroxy-3,5-dimethylphenyl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474064-03-4P, 3-(Methoxycarbonyl)-4-(4-hydroxy-3,5-dimethylphenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-05-6P, 3-Cyano-4-(4-hydroxy-3,5-dimethylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-07-8P, 3-(Methoxycarbonyl)-4-(4-hydroxy-3,5-diiodophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-09-0P, 3-(Methoxycarbonyl)-4-(3,5-difluorophenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-11-4P, 3-(Ethoxycarbonyl)-4-((2,4-dimethylphenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-13-6P, 3-(Ethoxycarbonyl)-4-((3-methylphenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-15-8P, 3-(Methoxycarbonyl)-4-(3,5-diiodo-4-methoxyphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-17-0P, 3-(Ethoxycarbonyl)-4-((8-quinolinyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-19-2P, 3-(Methoxycarbonyl)-4-(4-hydroxy-3,5-diiodophenyl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474064-21-6P

, 3-(Methoxycarbonyl)-4-(4-hydroxy-3,5-diiodophenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-23-8P, 3-(Methoxycarbonyl)-4-(3,5-difluorophenyl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474064-25-0P, 3-Carboxy-4-(3,5-dibromophenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-27-2P, 3-Cyano-4-(4-hydroxy-3,5-diiodophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-28-3P, 3-(Ethoxycarbonyl)-4-((methyl)(phenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-30-7P, 3-(Ethoxycarbonyl)-4-((3,5-dichlorophenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-32-9P, 3-(Ethoxycarbonyl)-4-(3,5-dibromo-4-hydroxyphenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-34-1P, 3-(Ethoxycarbonyl)-4-((3-bromophenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-36-3P, 3-(Ethoxycarbonyl)-4-((3-methoxyphenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-38-5P, 3-(Ethoxycarbonyl)-4-(4-hydroxy-3,5-diiodophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-40-9P, 3-(Ethoxycarbonyl)-4-(3,5-difluorophenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-42-1P, 3-(Methoxycarbonyl)-4-(4-quinolinyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-44-3P, 3-(Methoxycarbonyl)-4-(4-(difluoromethoxy)phenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-46-5P, 3-(Methoxycarbonyl)-4-(4-(difluoromethoxy)phenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-50-1P, 3-(Methoxycarbonyl)-4-(4-aminophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-52-3P, 3-(Methoxycarbonyl)-4-(4-(methylamino)phenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-53-4P, 3-(Methoxycarbonyl)-4-(4-nitrophenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-55-6P, 3-(Methoxycarbonyl)-4-(3-cyanophenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-57-8P, 3-Carboxy-4-(1-naphthyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-59-0P, 3-(Methoxycarbonyl)-4-(3-nitrophenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-61-4P, 3-(Methoxycarbonyl)-4-(3-fluoro-4-methylphenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-63-6P, 3-(Methoxycarbonyl)-4-(3-fluoro-5-(trifluoromethyl)phenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-65-8P, 3-(Methoxycarbonyl)-4-(4-fluoro-3-methylphenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-66-9P, 3-(Methoxycarbonyl)-4-((3,5-dichlorophenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-68-1P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-7,8-dimethoxy-5-oxo-5H-indeno[1,2-b]pyridine 474064-70-5P, 3-(Methoxycarbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-7,8-dimethoxy-5-oxo-5H-indeno[1,2-b]pyridine 474064-72-7P, 3-(Methoxycarbonyl)-4-(3-fluoro-4-methylphenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-76-1P, 3-(Methoxycarbonyl)-4-(phenylamino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-78-3P, 3-(Methoxycarbonyl)-4-((3-bromophenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-80-7P, 3-(Methoxycarbonyl)-4-(2-pyridyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-82-9P, 3-(Methoxycarbonyl)-4-(3,5-dichlorophenyl)-2-methyl-7,8-dimethoxy-5-oxo-5H-indeno[1,2-b]pyridine 474064-84-1P, 3-(Methoxycarbonyl)-4-(3-fluoro-5-(trifluoromethyl)phenyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474064-86-3P, 3-(Methoxycarbonyl)-4-(6-methyl-2-pyridyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-88-5P, 3-(Methoxycarbonyl)-4-(3-nitrophenyl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474064-90-9P, 3-(Methoxycarbonyl)-4-(4-nitrophenyl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine

RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(drug candidate; preparation of arylindenopyridines as phosphodiesterase inhibitors)

IT 474064-92-1P, 3-(Methoxycarbonyl)-4-((3-methylphenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-94-3P, 3-(Methoxycarbonyl)-4-((8-quinolinyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474064-96-5P, 3-(Methoxycarbonyl)-4-(4-methyl-1-naphthyl)-2-methyl-7,8-dihydroxy-5-oxo-5H-indeno[1,2-b]pyridine 474064-98-7P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-8-fluoro-5-oxo-5H-indeno[1,2-b]pyridine 474065-00-4P, 3-(Methoxycarbonyl)-4-(4-fluoro-3-(trifluoromethyl)phenyl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474065-02-6P, 3-(Methoxycarbonyl)-4-(4-fluoro-1-naphthyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474065-04-8P, 3-(Methoxycarbonyl)-4-((2,4-dimethylphenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474065-06-0P, 3-(Methoxycarbonyl)-4-((3-methoxyphenyl)amino)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474065-08-2P, 3-(Methoxycarbonyl)-4-(4-fluoro-1-naphthyl)-2-methyl-7-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474065-10-6P, 3-(Methoxycarbonyl)-4-(4-fluoro-1-naphthyl)-2-methyl-8-nitro-5-oxo-5H-indeno[1,2-b]pyridine 474065-12-8P, 3-(Methoxycarbonyl)-4-(4-fluoro-1-naphthyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474065-14-0P, 3-(Methoxycarbonyl)-4-(4-(dimethylamino)-1-naphthyl)-2-methyl-7,8-dichloro-5-oxo-5H-indeno[1,2-b]pyridine 474065-19-5P, 3-(Methoxycarbonyl)-4-isobutyl-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474065-22-0P, 3-(Methoxycarbonyl)-4-(3-butenyl)-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474065-24-2P, 3-(Methoxycarbonyl)-4-isopropyl-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474065-27-5P, 3-(Methoxycarbonyl)-4-methyl-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474065-30-0P, 3-(Methoxycarbonyl)-4-morpholino-2-methyl-5-oxo-5H-indeno[1,2-b]pyridine 474065-37-7P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-7-((piperazinoacetyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474065-39-9P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-7-(((1-imidazolyl)acetyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine 474065-41-3P, 3-(Methoxycarbonyl)-4-(3,5-dimethylphenyl)-2-methyl-8-((hydroxyacetyl)amino)-5-oxo-5H-indeno[1,2-b]pyridine
RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(drug candidate; preparation of arylindenopyridines as phosphodiesterase inhibitors)

IT 474061-80-8P 474061-86-4P 474061-87-5P 474061-91-1P 474061-92-2P 474061-94-4P 474061-97-7P 474062-01-6P 474062-03-8P
RL: PAC (Pharmacological activity); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(drug candidate; preparation of arylindenopyridines as phosphodiesterase inhibitors with therapeutic uses)

IT 57-57-8, β-Propiolactone 100-61-8, N-Methylaniline, reactions 105-45-3, Methyl acetoacetate 108-30-5, Succinic anhydride, reactions 110-91-8, Morpholine, reactions 606-23-5, 1,3-Indandione 1003-03-8, Cyclopentylamine 2043-61-0, Cyclohexanecarboxaldehyde 14205-39-1, Methyl 3-aminocrotonate 30414-53-0, Methyl propionylacetate 170748-75-1, Ethyl amidinoacetate acetic acid salt
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of arylindenopyridines as phosphodiesterase inhibitors)

IT 9068-52-4, Phosphodiesterase 5 391966-13-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(preparation of arylindenopyridines as phosphodiesterase inhibitors with therapeutic uses)

IT 619323-09-0P
RL: PAC (Pharmacological activity); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation of arylindenopyridines as phosphodiesterase inhibitors with therapeutic uses)

```
IT   619322-88-2P   619322-89-3P   619322-90-6P   619322-91-7P   619322-92-8P
     619322-93-9P   619322-94-0P   619322-95-1P   619322-96-2P   619322-97-3P
     619322-99-5P   619323-00-1P   619323-01-2P   619323-02-3P   619323-03-4P
     619323-04-5P   619323-05-6P   619323-06-7P
     RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU
     (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
     (Uses)
        (preparation of arylindenopyridines as phosphodiesterase inhibitors with
        therapeutic uses)
IT   3695-86-1   15875-60-2   296271-90-4   342420-99-9   474061-75-1
     474061-90-0   619323-10-3
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (preparation of arylindenopyridines as phosphodiesterase inhibitors with
        therapeutic uses)
IT   474061-74-0P   474061-76-2P   474061-78-4P   474061-79-5P   474061-82-0P
     474061-84-2P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation of arylindenopyridines as phosphodiesterase inhibitors with
        therapeutic uses)

L1   ANSWER 3 OF 3  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   2003:855799  HCAPLUS
DN   139:350637
ED   Entered STN:  31 Oct 2003
TI   Preparation of 5-oxo and 5-thio derivatives of 5H-indeno[1,2-b]pyridine
     with adenosine A2a receptor binding and phosphodiesterase inhibiting
     activity for the treatment of neurodegenerative disorders and inflammation
     related diseases
IN   Heintzelman, Geoffrey R.; Averill, Kristin M.; Dodd, John H.; Demarest,
     Keith T.; Tang, Yuting; Jackson, Paul F.
PA   Ortho-McNeil Pharmaceutical, Inc., USA
SO   PCT Int. Appl., 112 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
IC   ICM  A61K031-435
     ICS  A61K031-4709; C07D405-04; C07D221-16; C07D409-04; C07D401-04;
          C07D401-12
CC   27-16 (Heterocyclic Compounds (One Hetero Atom))
     Section cross-reference(s): 1, 63
FAN.CNT 5
     PATENT NO.          KIND   DATE       APPLICATION NO.       DATE
     ---------------     ----   --------   --------------------   --------
PI   WO 2003088963        A1    20031030   WO 2002-US30825        20020927 <--
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,
             UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
             FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF,
             CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     US 2003212089        A1    20031113   US 2002-123389         20020416 <--
     CA 2488929           AA    20031030   CA 2002-2488929        20020927 <--
     BR 2002015699        A     20050503   BR 2002-15699          20020927 <--
PRAI US 2002-123389       A     20020416  <--
     US 2001-284465P      P     20010418
     WO 2002-US30825      W     20020927
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------   -----  ----------------------------------------------
 WO 2003088963   ICM    A61K031-435
                 ICS    A61K031-4709; C07D405-04; C07D221-16; C07D409-04;
```

```
                              C07D401-04; C07D401-12
  WO 2003088963   ECLA        C07D221/16; C07D401/04+221+213; C07D401/04+221+215;
                              C07D401/04+241B+221; C07D401/12+233+221;
                              C07D405/04+307B+221; C07D405/04+317+221;
                              C07D405/04+319+221; C07D409/04+333B+221;
                              C07D491/04+307B+221B                              <--
  US 2003212089   NCL         514/290.000
                  ECLA        C07D221/16; C07D401/04+221+215; C07D401/04+221+213;
                              C07D401/04+241B+221; C07D401/12+233+221;
                              C07D405/04+307B+221; C07D405/04+319+221;
                              C07D405/04+317+221; C07D409/04+333B+221;
                              C07D491/04+307B+221B                              <--
OS    MARPAT 139:350637
GI



* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY -  AVAILABLE VIA OFFLINE PRINT *

AB    The title compds. [I; R1 = COR5 (wherein R5 = H, alkyl, aryl, arylalkyl),
      CO2R6 (R6 = H, alkyl, aryl, arylalkyl), CN, etc.; R2 = alkyl, aryl,
      heteroaryl, etc.; R3 = H, halo, alkyl, etc.; R4 = H, alkyl, CH2Ph, etc.; X
      = S, O], useful for treating disorders ameliorated by antagonizing
      adenosine A2a receptors or reducing PDE activity in appropriate cells,
      were prepared  Thus, oxidation of dihydropyridine II (preparation given) afforded
      81% III.  The IC50 and %inhibition data on PDE 4,5 and 7A, and Ki on A2a
      and A1 receptors binding for representative compds. I were given.
      Pharmaceutical compns. comprising the compound I are claimed.  This
      invention also provides therapeutic and prophylactic methods using the
      instant pharmaceutical compns.
ST    indenopyridine oxo thio prepn adenosine A2a receptor phosphodiesterase
      inhibitor
IT    Adenosine receptors
      RL: BSU (Biological study, unclassified); BIOL (Biological study)
         (A2A; preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine
         with adenosine A2a receptor binding and phosphodiesterase inhibiting
         activity for the treatment of neurodegenerative disorders and
         inflammation related diseases)
IT    Nervous system, disease
         (Huntington's chorea; preparation of 5-oxo and 5-thio derivs. of
         5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and
         phosphodiesterase inhibiting activity for the treatment of
         neurodegenerative disorders and inflammation related diseases)
IT    Brain, disease
         (degeneration, treatment of corticobasal degeneration; preparation of 5-oxo
         and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a
         receptor binding and phosphodiesterase inhibiting activity)
IT    Nervous system, disease
         (degeneration; preparation of 5-oxo and 5-thio derivs. of
         5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and
         phosphodiesterase inhibiting activity for the treatment of
         neurodegenerative disorders and inflammation related diseases)
IT    Gastrointestinal motility
         (disorder, dysmotility, treatment of esophageal spasm; preparation of 5-oxo
         and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a
         receptor binding and phosphodiesterase inhibiting activity)
IT    Allergy
         (hypersensitivity; preparation of 5-oxo and 5-thio derivs. of
         5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and
         phosphodiesterase inhibiting activity for the treatment of
         neurodegenerative disorders and inflammation related diseases)
IT    Sexual behavior
         (impotence, treatment of; preparation of 5-oxo and 5-thio derivs. of
         5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and
         phosphodiesterase inhibiting activity)
```

IT Intestine, disease
(inflammatory; preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and phosphodiesterase inhibiting activity for the treatment of neurodegenerative disorders and inflammation related diseases)

IT Nervous system, disease
(multiple system atrophy; preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and phosphodiesterase inhibiting activity for the treatment of neurodegenerative disorders and inflammation related diseases)

IT Parturition
(premature; preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and phosphodiesterase inhibiting activity for the treatment of neurodegenerative disorders and inflammation related diseases)

IT Alzheimer's disease
Anti-AIDS agents
Anti-Alzheimer's agents
Nervous system depressants
(preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and phosphodiesterase inhibiting activity)

IT Allergy
Allergy inhibitors
Anti-inflammatory agents
Antiarthritics
Antiasthmatics
Antiglaucoma agents
Antiparkinsonian agents
Asthma
Cardiovascular agents
Cardiovascular system, disease
Dysmenorrhea
Glaucoma (disease)
Human
Immunosuppressants
Inflammation
Movement disorders
Nervous system agents
Parkinson's disease
Psoriasis
Urinary tract, disease
(preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and phosphodiesterase inhibiting activity for the treatment of neurodegenerative disorders and inflammation related diseases)

IT Mental disorder
(senile psychosis; preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and phosphodiesterase inhibiting activity)

IT Bronchi, disease
(spasm; preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and phosphodiesterase inhibiting activity for the treatment of neurodegenerative disorders and inflammation related diseases)

IT Brain, disease
(stroke; preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and phosphodiesterase inhibiting activity for the treatment of neurodegenerative disorders and inflammation related diseases)

IT AIDS (disease)
(treatment of AIDS-related disorders; preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and phosphodiesterase inhibiting activity)

IT Apoidea
(treatment of bee sting; preparation of 5-oxo and 5-thio derivs. of

```
         5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and
         phosphodiesterase inhibiting activity)
IT    Esophagus, disease
         (treatment of esophageal spasm; preparation of 5-oxo and 5-thio derivs. of
         5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and
         phosphodiesterase inhibiting activity)
IT    Transplant and Transplantation
         (treatment of transplant-related disorders; preparation of 5-oxo and 5-thio
         derivs. of 5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding
         and phosphodiesterase inhibiting activity)
IT    Blood vessel, disease
         (treatment of; preparation of 5-oxo and 5-thio derivs. of
         5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and
         phosphodiesterase inhibiting activity)
IT    Arthritis
         (treatment of; preparation of 5-oxo and 5-thio derivs. of
         5H-indeno[1,2-b]pyridine with adenosine A2a receptor binding and
         phosphodiesterase inhibiting activity for the treatment of
         neurodegenerative disorders and inflammation related diseases)
IT    9036-21-9, Camp phosphodiesterase   9068-52-4, CGMP phosphodiesterase
      RL: BSU (Biological study, unclassified); BIOL (Biological study)
         (preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with
         adenosine A2a receptor binding and phosphodiesterase inhibiting
         activity for the treatment of neurodegenerative disorders and
         inflammation related diseases)
IT    474061-86-4P   474061-87-5P   474061-91-1P   474061-94-4P   474061-95-5P
      474061-97-7P   474061-99-9P   474062-01-6P
      RL: PAC (Pharmacological activity); RCT (Reactant); SPN (Synthetic
      preparation); THU (Therapeutic use); BIOL (Biological study); PREP
      (Preparation); RACT (Reactant or reagent); USES (Uses)
         (preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with
         adenosine A2a receptor binding and phosphodiesterase inhibiting
         activity for the treatment of neurodegenerative disorders and
         inflammation related diseases)
IT    68063-31-0P   77948-15-3P   105244-36-8P   128691-56-5P   373376-73-9P
      439108-77-7P   439137-49-2P   445221-30-7P   474061-77-3P   474061-80-8P
      474061-81-9P   474061-83-1P   474061-85-3P   474061-88-6P   474061-89-7P
      474061-92-2P   474061-93-3P   474061-96-6P   474061-98-8P   474062-00-5P
      474062-02-7P   474062-04-9P   474062-06-1P   474062-08-3P   474062-09-4P
      474062-10-7P   474062-11-8P   474062-12-9P   474062-13-0P   474062-14-1P
      474062-15-2P   474062-16-3P   474062-18-5P   474062-19-6P   474062-20-9P
      474062-21-0P   474062-22-1P   474062-23-2P   474062-24-3P   474062-25-4P
      474062-26-5P   474062-27-6P   474062-28-7P   474062-29-8P   474062-31-2P
      474062-32-3P   474062-33-4P   474062-34-5P   474062-35-6P   474062-36-7P
      474062-37-8P   474062-38-9P   474062-39-0P   474062-40-3P   474062-41-4P
      474062-42-5P   474062-43-6P   474062-44-7P   474062-45-8P   474062-46-9P
      474062-47-0P   474062-48-1P   474062-49-2P   474062-50-5P   474062-51-6P
      474062-52-7P   474062-53-8P   474062-54-9P   474062-55-0P   474062-56-1P
      474062-57-2P   474062-58-3P   474062-59-4P   474062-60-7P   474062-61-8P
      474062-62-9P   474062-63-0P   474062-64-1P   474062-65-2P   474062-66-3P
      474062-68-5P   474062-69-6P   474062-70-9P   474062-71-0P   474062-72-1P
      474062-73-2P   474062-74-3P   474062-75-4P   474062-76-5P   474062-77-6P
      474062-78-7P   474062-79-8P   474062-80-1P   474062-81-2P   474062-82-3P
      474062-83-4P   474062-84-5P   474062-85-6P   474062-86-7P   474062-87-8P
      474062-88-9P   474062-89-0P   474062-90-3P   474062-91-4P   474062-92-5P
      474062-93-6P   474062-94-7P   474062-95-8P   474062-96-9P   474062-97-0P
      474062-98-1P   474062-99-2P   474063-00-8P   474063-01-9P   474063-02-0P
      474063-03-1P   474063-04-2P   474063-05-3P   474063-07-5P   474063-08-6P
      474063-09-7P   474063-10-0P   474063-11-1P   474063-12-2P   474063-13-3P
      474063-14-4P   474063-15-5P   474063-16-6P   474063-17-7P   474063-18-8P
      474063-19-9P   474063-20-2P   474063-21-3P   474063-22-4P   474063-23-5P
      474063-24-6P   474063-25-7P   474063-26-8P   474063-27-9P   474063-28-0P
      474063-30-4P   474063-31-5P   474063-32-6P   474063-33-7P   474063-34-8P
      474063-35-9P   474063-36-0P   474063-37-1P   474063-38-2P   474063-39-3P
      474063-40-6P   474063-41-7P   474063-42-8P   474063-43-9P   474063-44-0P
      474063-45-1P   474063-46-2P   474063-48-4P   474063-50-8P   474063-52-0P
```

```
     474063-55-3P   474063-57-5P   474063-59-7P   474063-61-1P   474063-63-3P
     474063-65-5P   474063-66-6P   474063-68-8P   474063-70-2P   474063-74-6P
     474063-76-8P   474063-78-0P   474063-80-4P   474063-82-6P   474063-84-8P
     474063-86-0P   474063-87-1P   474063-88-2P   474063-90-6P   474063-92-8P
     474063-94-0P   474063-96-2P   474063-98-4P   474063-99-5P   474064-01-2P
     474064-03-4P   474064-05-6P   474064-07-8P   474064-09-0P   474064-11-4P
     474064-13-6P   474064-15-8P   474064-17-0P   474064-19-2P   474064-21-6P
     474064-23-8P   474064-25-0P   474064-27-2P   474064-28-3P   474064-30-7P
     474064-32-9P   474064-34-1P   474064-36-3P   474064-38-5P   474064-40-9P
     474064-42-1P   474064-44-3P   474064-46-5P   474064-50-1P   474064-52-3P
     474064-53-4P   474064-55-6P   474064-57-8P   474064-59-0P   474064-61-4P
     474064-63-6P   474064-65-8P   474064-66-9P   474064-68-1P   474064-70-5P
     474064-72-7P   474064-76-1P   474064-78-3P   474064-80-7P   474064-82-9P
     474064-84-1P   474064-86-3P   474064-88-5P   474064-90-9P   474064-92-1P
     474064-94-3P   474064-96-5P   474064-98-7P   474065-00-4P
     RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU
     (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
     (Uses)
        (preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with
        adenosine A2a receptor binding and phosphodiesterase inhibiting
        activity for the treatment of neurodegenerative disorders and
        inflammation related diseases)
IT   474065-04-8P   474065-06-0P   474065-08-2P   474065-10-6P   474065-12-8P
     474065-14-0P   474065-19-5P   474065-22-0P   474065-24-2P   474065-27-5P
     474065-30-0P   474065-37-7P   474065-39-9P   474065-41-3P   619322-81-5P
     619322-82-6P   619322-83-7P   619322-84-8P   619322-86-0P   619322-87-1P
     619322-88-2P   619322-89-3P   619322-90-6P   619322-91-7P   619322-92-8P
     619322-93-9P   619322-94-0P   619322-95-1P   619322-96-2P   619322-97-3P
     619322-98-4P   619322-99-5P   619323-00-1P   619323-01-2P   619323-02-3P
     619323-03-4P   619323-04-5P   619323-05-6P   619323-06-7P   619323-07-8P
     RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU
     (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
     (Uses)
        (preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with
        adenosine A2a receptor binding and phosphodiesterase inhibiting
        activity for the treatment of neurodegenerative disorders and
        inflammation related diseases)
IT   57-57-8, β-Propiolactone   79-14-1, Glycolic acid, reactions
     100-61-8, N-Methylaniline, reactions   105-45-3, Methyl acetoacetate
     108-30-5, Succinic anhydride, reactions   110-91-8, Morpholine, reactions
     606-23-5, 1,3-Indandione   1003-03-8, Cyclopentylamine   2043-61-0,
     Cyclohexanecarboxaldehyde   3695-86-1   14205-39-1, Methyl
     3-aminocrotonate   30414-53-0, Methyl propionylacetate   170748-75-1
     296271-90-4   342420-99-9   474061-75-1   474061-78-4   474061-79-5
     474062-03-8   619323-10-3
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with
        adenosine A2a receptor binding and phosphodiesterase inhibiting
        activity for the treatment of neurodegenerative disorders and
        inflammation related diseases)
IT   474061-74-0P   474061-82-0P   474061-84-2P   474061-90-0P   619323-08-9P
     619323-09-0P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation of 5-oxo and 5-thio derivs. of 5H-indeno[1,2-b]pyridine with
        adenosine A2a receptor binding and phosphodiesterase inhibiting
        activity for the treatment of neurodegenerative disorders and
        inflammation related diseases)
RE.CNT  31    THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Ambinter Exploratory Library; CAPLUS 2002:1552297 2002
(2) Ambinter Exploratory Library; CAPLUS 2002:2845045 2002
(3) Ambinter Exploratory Library; CAPLUS 2002:2845058 to 20022845060 2002
(4) Bayer Ag; EP 0825185 A 1998 HCAPLUS
(5) Bionet Research; CAPLUS 2001:2494321 2002
(6) Bionet Research; CAPLUS 2001:2494341 2002
```

```
(7) Compounds For Screening; CAPLUS 2001:1603530 2001
(8) Ez-El-Din, K; MANSOURA SCIENCE BULLETIN, A: CHEMISTRY 2000, V27(2), P35
    HCAPLUS
(9) Geies, A; BULLETIN OF THE POLISH ACADEMY OF SCIENCES, CHEMISTRY 1997,
    V45(4), P381 HCAPLUS
(10) Goerlitzer, K; PHARMAZIE 1997, V52(7), P504
(11) Interbioscreen Compound Library; CAPLUS 2002:3027027 2002
(12) Interchim Interediates; CAPLUS 2002:2403473 2002
(13) Interchim Interediates; CAPLUS 2002:2403487 2002
(14) Interchim Interediates; CAPLUS 2002:2403488 2002
(15) Interchim Interediates; CAPLUS 2002:2403489 2002
(16) Interchim Interediates; CAPLUS 2002:2548348 2002
(17) Interchim Intermediates; CAPLUS 2002:3011492 to 20023011513 2002
(18) Interchim Intermediats; CAPLUS 2002:2525250 2002
(19) Lusis, V; TETRAHEDRON 1991, V47(35), P7429 HCAPLUS
(20) Mucsenietce, D; KHIMIYA GETEROTSIKLICHESKIKH SOEDINENII 1987, 1, P86
    HCAPLUS
(21) Nippon Soda Co; WO 9308167 A 1993 HCAPLUS
(22) Nippon Soda Co Ltd; JP 2001139556 A 2001 HCAPLUS
(23) Sausins, A; KHIMIYA GETEROTSIKLICHESKIKH SOEDINENII 1995, 7, P966 HCAPLUS
(24) Stankevich, E; LATVIJAS PSR ZINATNU AKAD VESTIS, KIM SER 1962, 2, P283
(25) Vanags, G; ZH OBSHCH KHIM 1962, V32, P1151 HCAPLUS
(26) Vigante, B; KHIM GETEROTSIKL SOEDIN 1984, 2, P210 HCAPLUS
(27) Vigante, B; KHIMIYA GETEROTSIKLICHESKIKH SOEDINENII 1989, 5, P629 HCAPLUS
(28) Vigante, B; LATV PSR ZINAT AKAD VESTIS, KIM SER 1980, 6, P707 HCAPLUS
(29) Zandersons, A; KHIMIYA GETEROTSIKLICHESKIKH SOEDINENII 1986, 1, P88
    HCAPLUS
(30) Zandersons, A; KHIMIYA GETEROTSIKLICHESKIKH SOEDINENII 1986, 1, P88
    HCAPLUS
(31) Zandersons, A; KHIMIYA GETEROTSIKLICHESKIKH SOEDINENII 1986, 1, P88
    HCAPLUS


=> b wpix;d all l4 tot
FILE 'WPIX' ENTERED AT 17:33:13 ON 01 SEP 2005
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE LAST UPDATED:            26 AUG 2005      <20050826/UP>
MOST RECENT DERWENT UPDATE:      200555         <200555/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,
    PLEASE VISIT:
 http://www.stn-international.de/training_center/patents/stn_guide.pdf <<<

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE
    http://thomsonderwent.com/coverage/latestupdates/           <<<

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER
    GUIDES, PLEASE VISIT:
    http://thomsonderwent.com/support/userguides/               <<<

>>> NEW! FAST-ALERTING ACCESS TO NEWLY-PUBLISHED PATENT
    DOCUMENTATION NOW AVAILABLE IN DERWENT WORLD PATENTS INDEX
    FIRST VIEW - FILE WPIFV.
    FOR FURTHER DETAILS: http://www.thomsonderwent.com/dwpifv  <<<

>>> THE CPI AND EPI MANUAL CODES HAVE BEEN REVISED FROM UPDATE 200501.
    PLEASE CHECK:
http://thomsonderwent.com/support/dwpiref/reftools/classification/code-revision/
    FOR DETAILS. <<<
'BIX BI,ABEX' IS DEFAULT SEARCH FIELD FOR 'WPIX' FILE


L4   ANSWER 1 OF 3  WPIX  COPYRIGHT 2005 THE THOMSON CORP on STN
```

```
AN    2004-516928 [49]   WPIX
CR    2003-058708 [05]; 2003-903240 [82]
DNC   C2004-190742
TI    New arylindenopyridines and arylindenopyrimidines compounds useful for
      treating e.g. neurodegenerative disorder, Parkinson's disease, multiple
      system atrophy, Alzheimer's disease and senile dementia.
DC    B02
IN    BULLINGTON, J L; HEINTZELMAN, G R; RUPERT, K C
PA    (BULL-I) BULLINGTON J L; (HEIN-I) HEINTZELMAN G R; (RUPE-I) RUPERT K C
CYC   1
PI    US 2004127510   A1 20040701 (200449)*      23    A61K031-519    <--
ADT   US 2004127510 A1 CIP of US 2002-123389 20020416, CIP of US
      2002-259139 20020927, US 2003-678562 20031003
PRAI  US 2003-678562        20031003; US 2002-123389
      20020416; US 2002-259139       20020927
IC    ICM  A61K031-519
      ICS  A61K031-4745; C07D471-02; C07D487-02
AB    US2004127510 A UPAB: 20050517
      NOVELTY - Arylindenopyridine (I) and arylindenopyrimidine (II) compounds
      or their salts are new.
           DETAILED DESCRIPTION - Arylindenopyrimidines of formula (I) and
      arylindenopyridines of formula (II) or their salts are new;
           R1 = COR5, COOR5, cyano, CONR9R10 or 1-8C straight or branched chain
      alkyl (optionally substituted with T, carboxyl, (hetero)aryl,
      heterocyclyl, sulfonyl or (alkyl)thiol);
           R5 = alkyl, aryl, arylalkyl (all optionally substituted with T) or H;
           T = 1-8C alkoxy, phenylacetyloxy, hydroxy, halo, para-tosyloxy,
      mesyloxy, amino, cyano, carboalkoxy or NR7R8;
           R7 and R8 = H, 1-8C straight or branched chain alkyl, 3-7C
      cycloalkyl, (hetero)aryl or benzyl;
           R9 and R10 = 1-8C straight or branched chain alkyl, 3-7C cycloalkyl,
      (hetero)aryl, alkoxy, alkylcarbonyl, acyl, carboxyl, arylalkyl,
      heterocyclyl (all optionally substituted with T1), trifluoromethyl,
      hydroxy or H;
           T1 = (hetero)aryl, heterocyclyl (all optionally substituted),
      carboxyl, alkyl, hydroxamic acid, sulfonamide, sulfonamide, sulfonyl,
      hydroxy, thiol, amino, alkoxy or arylalkyl;
           R2 = alkyl, (hetero)aryl, heterocyclyl, 3-7C cycloalkyl (all
      optionally substituted), 1-8C alkoxy, aryloxy, 1-8C alkylsulfonyl,
      arylsulfonyl, arylthio, 1-8C alkylthio or NR24R25;
           R24 and R25 = H, 1-8C alkyl, arylalkyl, 3-7C cycloalkyl, carboxyalkyl
      (hetero)aryl or heterocyclyl;
           R3 = H, halo, 1-8C straight or branched chain alkyl, aralkyl, 3-7C
      cycloalkyl, 1-8C alkoxy, cyano, 1-4C carboalkoxy, trifluoromethyl, 1-8C
      alkylsulfonyl, halo, nitro, OH, trifluoromethoxy, 1-8C carboxylate,
      (hetero)aryl, heterocyclyl, NR11R12 or NR13COR14;
           R11 and R12 = H, 1-8C straight or branched chain alkyl, arylalkyl,
      3-7C cycloalkyl, carboxyalkyl, (hetero)aryl or heterocyclyl;
           R13 = H or alkyl;
           R14 = H, alkyl (optionally substituted), 1-3C alkoxy, carboxyalkyl,
      aryl, arylalkyl, heteroaryl, heterocyclyl, R15R16N(CH2)p or
      R15R-16NCO(CH2)p;
           R15 and R16 = H, OH, alkyl (optionally substituted carboxyl, alkyl,
      optionally substituted (hetero)aryl, optionally substituted heterocyclyl,
      optionally substituted heteroaryl, hydroxamic acid, sulfonamide, sulfonyl,
      hydroxy, thiol, alkoxy or arylalkyl) or alkoxy;
      p = 1-6;
           R4 = 1-6C straight or branched chain alkyl, benzyl (both optionally
      substituted with 3-7C cycloalkyl, 1-8C alkoxy, cyano, 1-4C carboalkoxy,
      trifluoromethyl, 1-8 alkylsulfonyl, halo, nitro, hydroxy,
      trifluoromethoxy, 1-8C carboxylate, amino, NR17R18 or (hetero)aryl), H,
      OR17 or NR17R18;
           R17 and R18 = 1-6C alkyl, aryl (both optionally substituted) or H;
           X = C=S, C=O, CH2, CHOH, CHOR19 or CHNR20R21;
           R19 - R21  = 1-8C straight or branched chain alkyl (optionally
      substituted with 1-8C alkoxy, OH, halo, amino, cyano or NR22R23);
```

```
          R22 and R23 = H, 1-8C straight or branched chain alkyl, 3-7C
     cycloalkyl, benzyl or (hetero)aryl;
          NR7R8, NR9R10, NR11R12, NR22R23 or NR24R25 = heterocycle or
     heteroaryl;
          R13COR14 = carbonyl containing heterocyclyl.
          Provided that in (II), when R1 is cyano, then R2 is other than
     phenyl.
          ACTIVITY - Nootropic; Neuroprotective; Antiparkinsonian;
     Anticonvulsant.
          Mature male C57bl/6 mice were injected with haloperidol or vehicle at
     1.5 mg/kg or 7.5 ml/kg. After 30 minutes the mice were orally dosed with
     vehicle (0.3 % Tween 80 (RTM) in saline) or 2-amino-4-furan-2-yl-
     indeno(1,2-d)pyrimidin-5-one (A) (10 mg/kg). After 1 hour the mice were
     tested for catalepsy.
          (A) Showed 90% inhibition of haloperidol-induced catalepsy.
          MECHANISM OF ACTION - Adenosine A2a, A1 and A3 Receptor Antagonist.
          CHO-Ki cells overexpressing human adenosine A2a receptors and
     containing camp-inducible beta -galactosidase receptor gene were seeded at
     40 - 50 K/well into 96-well tissue culture plates and cultured for two
     days. The cells were incubated with 2-amino-4-furan-2-yl-indeno(1,2-
     d)pyrimidin-5-one (A) for 5 minutes at room temperature followed by
     addition of adenosine A2a agonist - NECA (50 nM) and then incubated at 37
     deg. C, 5% CO2 for 5 hours. A Promega (RTM; buffer) was added to each well
     and plates were frozen at -20 deg. C. The plates were counted and a Ki
     value was calculated. The Ki value of (A) was 0.0066 nM.
          USE - The compounds (I), and (II) are used for treating disorder
     ameliorated by antagonizing adenosine A2a receptors e.g. neurodegenerative
     disorder or a movement disorder e.g. Parkinson's disease, Huntington's
     disease, multiple system atrophy, Cortico-basal degeneration, Alzheimer's
     disease and senile dementia (claimed).
          ADVANTAGE - The compounds (I) and (II) are potent antagonist of
     adenosine A2a receptors.
     Dwg.0/0
FS   CPI
FA   AB; GI; DCN
MC   CPI: B06-D13; B06-D16; B14-J01; B14-L06; B14-S01

L4   ANSWER 2 OF 3  WPIX  COPYRIGHT 2005 THE THOMSON CORP on STN
AN   2003-903240 [82]    WPIX
CR   2003-058708 [05]; 2004-516928 [49]
DNC  C2003-256713
TI   New 5-oxo and 5-thio derivatives of 5H-indeno-1,2-bipyridine are
     phosphodiesterase inhibitors and adenosine A2a receptor antagonists useful
     in the treatment of diseases e.g. erectile dysfunction and senile
     dementia.
DC   B02
IN   AVERILL, K M; DEMAREST, K T; DODD, J H; HEINTZELMAN, G R; JACKSON, P F;
     TANG, Y; JACKSON, P E
PA   (ORTH) ORTHO-MCNEIL PHARM INC
CYC  100
PI   WO 2003088963   A1 20031030 (200382)* EN  112    A61K031-435
        RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU
            MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW
         W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
            DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR
            KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT
            RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM
            ZW
     AU 2002341875   A1 20031103 (200438)             A61K031-435
     BR 2002015699   A  20050503 (200531)             A61K031-435
ADT  WO 2003088963 A1 WO 2002-US30825 20020927; AU 2002341875 A1 AU 2002-341875
     20020927; BR 2002015699 A BR 2002-15699 20020927, WO 2002-US30825 20020927
FDT  AU 2002341875 A1 Based on WO 2003088963; BR 2002015699 A Based on WO
     2003088963
PRAI US 2002-123389        20020416
IC   ICM  A61K031-435
```

ICS A61K031-4709; C07D221-16; C07D401-04; C07D401-12; C07D405-04;
C07D409-04

AB WO2003088963 A UPAB: 20050517

NOVELTY - 5-oxo and 5-thio derivatives of 5H-indeno-1,2-bipyridine (I) and their pharmaceutically acceptable salts, esters or pro-drug forms are new.

DETAILED DESCRIPTION - 5-oxo and 5-thio derivatives of 5H-indeno-1,2-bipyridine of formula (I) and their pharmaceutically acceptable salts, esters or pro-drugs are new.

R1 = COR5, COOR6, CN, lactone or lactam formed with R4, CONR7R8, carboxylic ester or carboxylic acid bioisostere including optionally substituted heteroaryl;

R5, R6 = optionally branched 1-8C alkyl, aryl, arylalkyl (all optionally substituted with 1-8C alkoxy, phenylacetyloxy, OH, halo, p-tosyloxy, mesyloxy, NH2, CN, carboalkyl or NR20R21) or H;

R20, R21 = A, H, benzyl, aryl or heteroaryl;

A = optionally branched 1-8C alkyl, 3-7C cycloalkyl;

R7, R8 = A, alkoxy, aryl, alkylcarbonyl, COOH, arylalkyl, aryl, Q (all optionally substituted with aryl, Q (all optionally substituted), COOH, alkyl, hydroxomic acid, sulfonamide, sulfonyl, OH, thiol, alkoxy or arylalkyl), H, trifluoromethyl or OH;

R2 = alkyl, aryl, Q or 3-7C cycloalkyl (all optionally substituted);

R3 = T, 3-7C cycloalkyl, arylalkyl, trifluoromethoxy, 1-8C carboxylate, aryl, Q, NR10R11 or NR12COR13;

R10, R11 = A, H, arylalkyl, carboxyalkyl, aryl, Q;

R12 = H or alkyl;

R13 = H, alkyl, substituted alkyl, 1-3C alkoxy, carboxyalkyl, R30R31N(CH2)p-, R30R31NCO(CH2)p-, aryl, arylalkyl or Q;

COR12R13 = carbonyl containing heteroaryl;

R30R31 = H, OH, alkyl or alkoxy;

NR20R21, NR7R8, NR10R11 = Q;

Q = heteroaryl or heterocyclyl;

T = H, halo, optionally branched 1-8C alkyl, 1-8C alkoxy, arylalkyl, CN, 1-4C carboalkoxy, trifluoromethyl, 1-8C alkylsulfoxy or OH;

R4 = optionally branched 1-3C alkyl, benzyl (all optionally substituted with 3-7C cycloalkyl, 1-8C alkoxy, CN, 1-4C carboalkoxy, trifluoromethyl, 1-8C alkylsulfonyl, halo, NO2, OH, trifluoromethoxy, 1-8C carboxylate, NH2, NR15R14, aryl and/or heteroaryl), H or NR15R14;

R15, R14 = H or 1-6C alkyl;

X = S or O; and

p = 1-6.

Provided that when R4 is isopropyl then R3 is not halogen.

INDEPENDENT CLAIMS are also included for:

(1) treatment or prevention of disorder ameliorated by reducing phosphodiesterase (PDE) activity in appropriate cell comprises administration of (I);

(2) inhibition of PDE activity comprises contacting T-cells with (I);

(3) artificial modification of an animal comprises administration of (I) to the animals T-cell; and

(4) treatment or prevention of disorder ameliorated by antagonizing adenosine A2a receptors in appropriate cells comprises administration of (I).

ACTIVITY - Antiallergic; Immunosuppressive; Antiarthritic; Antiasthmatic; Analgesic; Gynecological; Ophthalmological; Tocolytic; Uropathic; Anti-inflammatory; Gastrointestinal-Gen; Cerebroprotective; Vasotropic; Anti-HIV; Cardiovascular-Gen; Anti-psoriatic; Antiparkinsonian; Anticonvulsant; Nootropic.

MECHANISM OF ACTION - Phosphodiesterase inhibitor; Adenosine A2a receptor antagonist.

No test details are given.

USE - (I) are useful in the prevention and treatment of disorders ameliorated by reducing phosphodiesterase activity e.g. transplant related disorders, inflammatory related disorders, AIDS related disorders, vascular diseases and erectile dysfunction (preferably hypersensitivity, allergy, arthritis, asthma, bee sting, animal bite, bronchospasm, dysmenorrhea, esophageal spasm, glaucoma, premature labor, urinary tract disorder, inflammatory bowel disease, stroke, erectile dysfunction,

```
     HIV/AIDS, cardiovascular disease, gastrointestinal motility or psoriasis)
     and disorders ameliorated by antagonizing adenosine A2a receptors e.g.
     neuro degenerative disorder or movement disorder (preferably Parkinson's
     disease, Huntington's disease, multiple system atrophy, cortico basal
     degeneration Alzheimer's disease and senile dementia) (claimed).
          ADVANTAGE - (I) is potential inhibitor of phosphodiesterase activity
     and antagonist of Adenosine A2a receptor.
     Dwg.0/0
FS   CPI
FA   AB; GI; DCN
MC   CPI: B06-D13; B14-A02B1; B14-C03; B14-C09; B14-D07A; B14-E10C; B14-F01;
          B14-F02; B14-G01B; B14-G02A; B14-G02B; B14-G02C; B14-J01A3;
          B14-J01A4; B14-J07; B14-K01A; B14-L06; B14-N03; B14-N07; B14-N14;
          B14-N16; B14-N17C; B14-P02; B14-P03

L4   ANSWER 3 OF 3  WPIX  COPYRIGHT 2005 THE THOMSON CORP on STN
AN   2003-058708 [05]   WPIX
CR   2003-903240 [82]; 2004-516928 [49]
DNC  C2003-015192
TI   New arylindenopyridine derivatives are phosphodiesterase inhibitors,
     useful for treating e.g. inflammatory and AIDS related disorders.
DC   B02
IN   AVERILL, K M; DODD, J H; HEINTZELMAN, G R; DEMAREST, K T; JACKSON, P F;
     TANG, Y
PA   (ORTH) ORTHO-MCNEIL PHARM INC; (AVER-I) AVERILL K M; (DODD-I) DODD J H;
     (HEIN-I) HEINTZELMAN G R; (DEMA-I) DEMAREST K T; (JACK-I) JACKSON P F;
     (TANG-I) TANG Y; (ORTH-N) ORTHO-MUNIEL PHARM INC
CYC  101
PI   WO 2002085894    A1 20021031 (200305)* EN   91    C07D405-04
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
            NL OA PT SD SE SL SZ TR TZ UG ZM ZW
         W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
            DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR
            KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT
            RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW
     US 2003212089    A1 20031113 (200382)             A61K031-473
     EP 1385843       A1 20040204 (200410)  EN         C07D405-04
         R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
            RO SE SI TR
     US 2004082578    A1 20040429 (200429)             A61K031-5377
     AU 2002256225    A1 20021105 (200433)             C07D405-04
     CN 1516698       A  20040728 (200469)             C07D405-04
     JP 2004532228    W  20041021 (200469)      162    C07D221-16
     US 6903109       B2 20050607 (200539)             A61K031-438
ADT  WO 2002085894 A1 WO 2002-US11823 20020416; US 2003212089 A1 Provisional US
     2001-284465P 20010418, US 2002-123389 20020416; EP 1385843 A1 EP
     2002-725675 20020416, WO 2002-US11823 20020416; US 2004082578 A1
     Provisional US 2001-284465P 20010418, CIP of US 2002-123389
     20020416, US 2002-259139 20020927; AU 2002256225 A1 AU 2002-256225
     20020416; CN 1516698 A CN 2002-811974 20020416; JP 2004532228 W JP
     2002-583421 20020416, WO 2002-US11823 20020416; US 6903109 B2 Provisional
     US 2001-284465P 20010418, CIP of US 2002-123389 20020416, US
     2002-259139 20020927
FDT  EP 1385843 A1 Based on WO 2002085894; AU 2002256225 A1 Based on WO
     2002085894; JP 2004532228 W Based on WO 2002085894
PRAI US 2001-284465P       20010418; US 2002-123389
     20020416; US 2002-259139       20020927
IC   ICM  A61K031-438; A61K031-473; A61K031-5377; C07D221-16; C07D405-04
     ICS  A61K031-435; A61K031-4355; A61K031-444; A61K031-4709; A61K031-496;
          A61P001-04; A61P001-06; A61P007-00; A61P009-00; A61P009-04;
          A61P011-06; A61P013-02; A61P015-00; A61P015-06; A61P015-10;
          A61P017-06; A61P019-02; A61P027-06; A61P029-00; A61P031-18;
          A61P037-00; A61P037-06; A61P037-08; A61P039-00; A61P043-00;
          C07D221-22; C07D401-04; C07D403-02; C07D409-04; C07D413-02;
          C07D491-048
AB   WO 200285894 A UPAB: 20050621
```

NOVELTY - Arylindenopyridine derivatives (I) are new.

DETAILED DESCRIPTION - Arylindenopyridine derivatives of formula (I), and their salts, esters and pro-drugs, are new:

R1 = -COR5, COOR6, CN or CONR7R8; or R1+R4 form a lactone or lactam;

R5, R6 = H; or 1-8C alkyl, aryl or arylalkyl, each optionally substituted with Q;

Q = 1-8C alkoxy, phenylacetyloxy, OH, halo, p-tosyloxy, mesyloxy, NH2, CN, carboalkoxy or NR20R21;

R20, R21 = H, 1-8C alkyl, 3-7C cycloalkyl, benzyl, aryl or heteroaryl; or R20 and R21 together with N to which they are attached may form a heterocycle or heteroaryl;

R7, R8 = H, CF3, OH; or 1-8C alkyl, 3-7C cycloalkyl, alkoxy, acyl, alkylcarbonyl, carboxyl, arylalkyl, aryl, heteroaryl or heterocyclyl, each optionally substituted with Q1; or R7 and R8 together with N to which they are attached may form a heterocycle or heteroaryl;

Q1 = carboxyl, alkyl, hydroxamic acid, sulfonamide, sulfonyl, OH, thiol, alkoxy, arylalkyl; or aryl, heterocyclyl or heteroaryl, each optionally substituted;

R2 = alkyl, aryl, heteroaryl, heterocyclyl or 3-7C cycloalkyl, each optionally substituted;

R3 = 1-4 of H, halo, 1 8C alkyl, arylalkyl, 3-7C cycloalkyl, 1-8C alkoxy, CN, 1-4C carboalkoxy, CF3, 1-8C alkylsulfonyl, halo, NO2, OH, trifluoromethoxy, 1-8C carboxylate, aryl, heteroaryl, heterocyclyl, -NR10R11 or -NR12COR13;

R10, R11 = H, 1-8C alkyl, arylalkyl, 3-7C cycloalkyl, carboxyalkyl, aryl, heteroaryl or heterocyclyl; or R10 and R11 together with N to which they are attached may form a heteroaryl or heterocyclyl;

R12 = H or alkyl;

R13 = H, optionally substituted alkyl, 1 3C alkoxy, carboxyalkyl, R30R31N(CH2)p-, R30R31NCO(CH2)p-, aryl, arylalkyl, heteroaryl or heterocyclyl; or R12 and R13 together with carbonyl form a carbonyl containing heterocyclyl;

R30, R31 = H, OH, alkyl or alkoxy;

p = 1-6;

R4 = H, NR13R14; or 1-3C alkyl or benzyl, each optionally substituted with 1 or more Q2;

R13, R14 = H or 1-6C alkyl;

Q2 = 3-7C cycloalkyl, 1-8C alkoxy, CN, 1-4C carboalkoxy, CF3, 1-8C alkylsulfonyl, halo, NO2, OH, trifluoromethoxy, 1-8C carboxylate, NH2, NR13R14, aryl or heteroaryl;

X = S or O;

provided that when R4 is isopropyl, then R3 is not halo. Alternatively, R1, R3 and R4 are as described above, and R2 is NR15R16; R15, R16 = H, optionally substituted 1-8C alkyl, arylalkyl, 3-7C cycloalkyl, aryl, heteroaryl or heterocyclyl; provided that when R2 is NHR16, R1 is not COOEt.

ACTIVITY - Antiinflammatory; antiallergic; antiasthmatic; gynecological; analgesic; ophthalmological; tocolytic; cerebroprotective; vasotropic; anti-HIV; antipsoriatic.

MECHANISM OF ACTION - Phosphodiesterase inhibitors.

Phosphodiesterase (PDE) activity was determined using a homogeneous scintillation proximity assay. IC50 values for 4-(3,5 dimethylphenyl)-2-methyl-5-oxo-5H-indeno(1,2-b)pyridine-3 carboxylic acid, methyl ester were: 0.055, 0.353 and 2.7 micro M for PDE7A, PDE4 and PDE5 respectively.

USE - For preventing or treating disorders ameliorated by reducing PDE activity in appropriate cells, e.g. transplant related disorders, inflammatory-related disorders, AIDS-related disorders, vascular diseases and erectile dysfunction, particularly hypersensitivity, allergy, arthritis, asthma, bee sting, animal bite, bronchospasm, dysmenorrhea, esophageal spasm, glaucoma, premature labor, a urinary tract disorder, inflammatory bowel disease, stroke, erectile dysfunction, HIV/AIDS, cardiovascular disease, gastrointestinal motility disorder or psoriasis (all claimed). Mammals which may be treated include mouse, rat, rabbit and guinea pig.

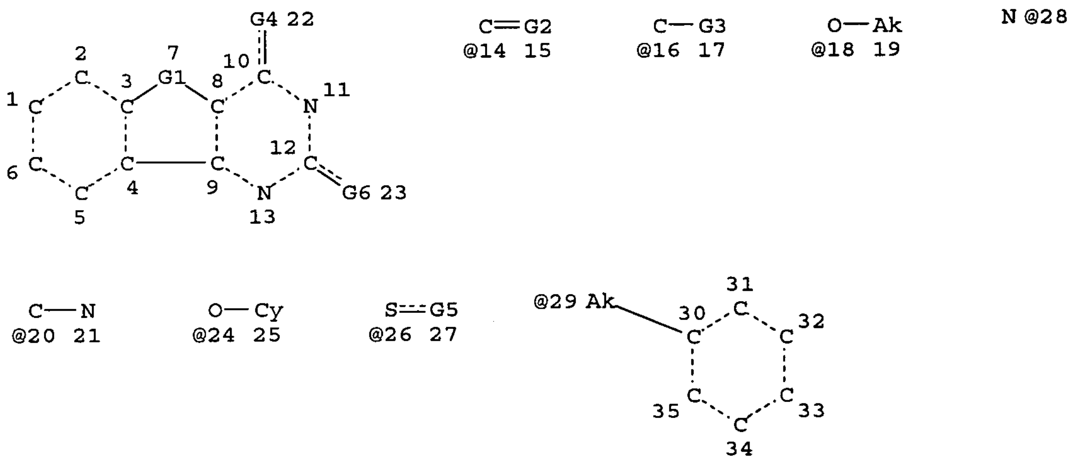
Dwg.0/0

FS CPI

```
FA   AB; GI; DCN
MC   CPI: B06-D13; B14-A02B1; B14-C01; B14-C03; B14-C09; B14-D02; B14-D07A;
          B14-E10C; B14-F01; B14-F02; B14-G02A; B14-G02C; B14-N03; B14-N07;
          B14-N14; B14-N16; B14-N17C; B14-P02


=> b home
FILE 'HOME' ENTERED AT 17:33:19 ON 01 SEP 2005

=>
```

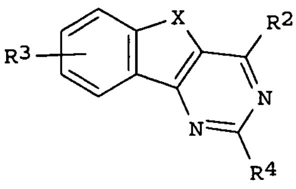
```
=> d his

     (FILE 'HOME' ENTERED AT 17:31:04 ON 01 SEP 2005)

     FILE 'HCAPLUS' ENTERED AT 17:31:08 ON 01 SEP 2005
L1             3 US2004127510/PN OR (US2003-678562# OR US2002-123389#)/AP,PRN

     FILE 'REGISTRY' ENTERED AT 17:32:14 ON 01 SEP 2005

     FILE 'HCAPLUS' ENTERED AT 17:32:14 ON 01 SEP 2005
L2               TRA L1 1- RN :      445 TERMS

     FILE 'REGISTRY' ENTERED AT 17:32:15 ON 01 SEP 2005
L3           445 SEA L2

     FILE 'WPIX' ENTERED AT 17:32:19 ON 01 SEP 2005
L4             3 L1

     FILE 'REGISTRY' ENTERED AT 17:35:24 ON 01 SEP 2005
L5            65 L3 AND C5-NCNC3-C6/ES
L6               STR
L7            11 L6
L8           190 L6 FULL
L9            65 L8 AND L3

     FILE 'HCAPLUS' ENTERED AT 17:52:58 ON 01 SEP 2005
L10           20 L8

     FILE 'HCAOLD' ENTERED AT 17:53:11 ON 01 SEP 2005
L11            1 L8
                 SEL AN L11
                 EDIT E1 /AN /OREF

     FILE 'HCAPLUS' ENTERED AT 17:53:31 ON 01 SEP 2005
L12            2 E1
L13           22 L10,L12
                 E HEINTZELMAN/AU
L14          140 E11-14
                 E BULINGTON/AU
                 E BULLINGTON/AU
L15           29 E9-13
                 E RUPERT K/AU
L16           21 E6-7
L17          321 (ORTHOMCNEIL OR ORTHO (W)(MCNEIL OR MC(1A)NEIL))/CS,PA
L18            2 L13 AND L14-17
L19           20 L13 NOT L18

     FILE 'HCAOLD' ENTERED AT 17:58:00 ON 01 SEP 2005
                 SEL HIT RN L11

     FILE 'REGISTRY' ENTERED AT 17:58:34 ON 01 SEP 2005
L20            1 E1

=> b reg
FILE 'REGISTRY' ENTERED AT 17:57:24 ON 01 SEP 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2005 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES:    31 AUG 2005  HIGHEST RN 862246-83-1
DICTIONARY FILE UPDATES:   31 AUG 2005  HIGHEST RN 862246-83-1

New CAS Information Use Policies, enter HELP USAGETERMS for details.
```

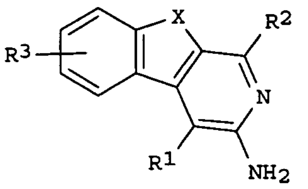
```
TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2005

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

*********************************************************************
*                                                                   *
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added,   *
* effective March 20, 2005.  A new display format, IDERL, is now    *
* available and contains the CA role and document type information. *
*                                                                   *
*********************************************************************

Structure search iteration limits have been increased.  See HELP SLIMITS
for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html

=> d que sta l8
L6                STR
```



```
VAR G1=14/CH2/16/20
VAR G2=O/S
VAR G3=OH/18
VAR G4=AK/CY/18/24/26/28
VAR G5=AK/CY
VAR G6=H/AK/29/O/N
NODE ATTRIBUTES:
NSPEC   IS RC     AT  21
NSPEC   IS RC     AT  28
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS  35

STEREO ATTRIBUTES: NONE
L8           190 SEA FILE=REGISTRY SSS FUL L6

100.0% PROCESSED    5082 ITERATIONS                          190 ANSWERS
SEARCH TIME: 00.00.01
```

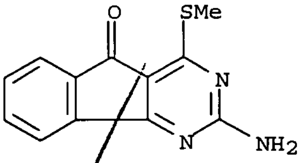
```
=> b hcap
FILE 'HCAPLUS' ENTERED AT 17:57:30 ON 01 SEP 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)


Copyright of the articles to which records in this database refer is
held by the publishers listed in the PUBLISHER (PB) field (available
for records published or updated in Chemical Abstracts after December
26, 1996), unless otherwise indicated in the original publications.
The CA Lexicon is the copyrighted intellectual property of the
the American Chemical Society and is provided to assist you in searching
databases on STN.  Any dissemination, distribution, copying, or storing
of this information, without the prior written consent of CAS, is
strictly prohibited.

FILE COVERS 1907 - 1 Sep 2005  VOL 143 ISS 10
FILE LAST UPDATED: 31 Aug 2005  (20050831/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

=> d all fhitstr l18 tot

L18  ANSWER 1 OF 2  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   2005:409492  HCAPLUS
DN   142:463744
ED   Entered STN:  13 May 2005
TI   Preparation of arylindenopyridines and arylindenopyrimidines and their use
     as adenosine A2a receptor antagonists
IN   Heintzelman, Geoffrey R.; Bullington, James L.;
     Rupert, Kenneth C.
PA   Ortho-Mcneil Pharmaceutical, Inc., USA
SO   PCT Int. Appl., 53 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
IC   ICM  C07D239-70
     ICS  C07D405-04; C07D401-04; C07D417-04; C07D409-04; C07D401-12;
          C07D405-12; C07D401-06; C07D221-16; A61K031-505; A61K031-5355
CC   28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
     Section cross-reference(s): 1, 63
FAN.CNT 5
     PATENT NO.          KIND   DATE       APPLICATION NO.       DATE
     ---------------     ----   --------   --------------------  --------
PI   WO 2005042500        A1    20050512   WO 2003-US31471       20031003
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,
             PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT,
             TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
             FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     CN 1516698           A     20040728   CN 2002-811974        20020416
PRAI US 2001-284465P      P     20010418
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------    -----  ------------------------------------------------
 WO 2005042500    ICM    C07D239-70
                  ICS    C07D405-04; C07D401-04; C07D417-04; C07D409-04;
                         C07D401-12; C07D405-12; C07D401-06; C07D221-16;
                         A61K031-505; A61K031-5355
 WO 2005042500    ECLA   C07D221/16; C07D239/70; C07D401/04; C07D401/06;
                         C07D401/12; C07D405/04; C07D405/14; C07D409/04;
                         C07D417/04
OS   MARPAT 142:463744
GI
```


I


II

```
AB   The title compds. I or II [R1 = COR5, CO2R5 (wherein R5 = H, alkyl, aryl,
     arylalkyl), CN, etc.; R2 = alkyl, aryl, heteroaryl, etc.; R3 = H, halo,
     alkyl, etc.; R4 = H, alkyl, benzyl, etc.; X = C(S), C(O), CH2, CH(OH),
     etc.; with the proviso that in II when R1 = CN, then R2 is not Ph], useful
     for treating disorders ameliorated by antagonizing adenosine A2a
     receptors, were prepared  Nineteen examples describe preparation of compds. I and
     II, and their intermediates.  Over 90 compds. I and II were prepared  Compound
     I [R2 = 2-furyl; R3 = H; R4 = NH2; X = C(O)] showed 90% inhibition of
     haloperidol-induced catalepsy when orally dosed at 10 mg/kg.  This
     invention also provides therapeutic and prophylactic methods using the
     instant compds. and pharmaceutical compns.
ST   arylindenopyridine prepn adenosine A2a receptor antagonist;
     arylindenopyrimidine prepn adenosine A2a receptor antagonist
IT   Adenosine receptors
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (A2A; preparation of arylindenopyridines and arylindenopyrimidines and their
        use as adenosine A2a receptor antagonists)
IT   Nervous system, disease
        (Huntington's chorea, treating; preparation of arylindenopyridines and
        arylindenopyrimidines and their use as adenosine A2a receptor
        antagonists)
IT   Nervous system, disease
        (degeneration, treating; preparation of arylindenopyridines and
        arylindenopyrimidines and their use as adenosine A2a receptor
        antagonists)
IT   Nervous system, disease
        (multiple system atrophy, treating; preparation of arylindenopyridines and
        arylindenopyrimidines and their use as adenosine A2a receptor
        antagonists)
IT   Alzheimer's disease
     Anti-Alzheimer's agents
     Antiparkinsonian agents
     Human
        (preparation of arylindenopyridines and arylindenopyrimidines and their use
        as adenosine A2a receptor antagonists)
IT   Mental disorder
        (senile psychosis, treating; preparation of arylindenopyridines and
        arylindenopyrimidines and their use as adenosine A2a receptor
        antagonists)
IT   Movement disorders
     Parkinson's disease
        (treating; preparation of arylindenopyridines and arylindenopyrimidines and
        their use as adenosine A2a receptor antagonists)
IT    70760-90-6P 713514-60-4P 713514-61-5P
      713514-63-7P 713514-79-5P   713515-09-4P   713515-14-1P
      713515-42-5P   713515-55-0P
      RL: PAC (Pharmacological activity); RCT (Reactant); SPN (Synthetic
      preparation); THU (Therapeutic use); BIOL (Biological study); PREP
      (Preparation); RACT (Reactant or reagent); USES (Uses)
         (preparation of arylindenopyridines and arylindenopyrimidines and their use
         as adenosine A2a receptor antagonists)
IT    110117-36-7P 110117-45-8P   439277-04-0P
      713514-51-3P 713514-52-4P 713514-53-5P
      713514-54-6P 713514-55-7P 713514-56-8P
      713514-57-9P 713514-58-0P 713514-59-1P
      713514-62-6P 713514-64-8P 713514-65-9P
      713514-66-0P 713514-67-1P 713514-68-2P
      713514-69-3P 713514-70-6P 713514-71-7P
      713514-72-8P 713514-73-9P 713514-74-0P
      713514-75-1P 713514-76-2P 713514-77-3P
      713514-78-4P 713514-81-9P 713514-84-2P
      713514-85-3P 713514-86-4P 713514-87-5P
      713514-88-6P 713514-89-7P 713514-90-0P
      713514-91-1P 713514-92-2P 713514-93-3P
      713514-94-4P 713514-95-5P 713514-96-6P
      713514-97-7P 713514-98-8P 713514-99-9P
      713515-00-5P 713515-01-6P 713515-02-7P
      713515-03-8P 713515-05-0P 713515-06-1P
      713515-07-2P 713515-08-3P   713515-10-7P   713515-11-8P
      713515-12-9P   713515-13-0P   713515-15-2P   713515-16-3P   713515-17-4P
      713515-18-5P   713515-19-6P   713515-20-9P   713515-21-0P   713515-22-1P
      713515-23-2P   713515-24-3P   713515-25-4P   713515-26-5P   713515-27-6P
      713515-28-7P   713515-29-8P   713515-30-1P   713515-31-2P   713515-32-3P
      713515-33-4P   713515-34-5P   713515-35-6P   713515-36-7P   713515-37-8P
      713515-38-9P   713515-39-0P   713515-40-3P 713515-41-4P
      713515-58-3P 851727-51-0P 851727-52-1P
      851727-53-2P 851727-54-3P   851727-55-4P
      RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU
      (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
      (Uses)
         (preparation of arylindenopyridines and arylindenopyrimidines and their use
         as adenosine A2a receptor antagonists)
IT    50-01-1, Guanidine hydrochloride   62-53-3, Aniline, reactions   98-01-1,
      2-Furaldehyde, reactions   100-59-4, Phenylmagnesium chloride   106-95-6,
      Allyl bromide, reactions   109-01-3, N-Methylpiperazine   109-64-8,
      1,3-Dibromopropane   110-00-9, Furan   142-25-6, N,N,N'-
      Trimethylethylenediamine   762-42-5, Dimethyl acetylenedicarboxylate
      1080-74-6   4584-46-7, 2-(Dimethylamino)ethyl chloride hydrochloride
      34381-71-0, (S)-1-Methyl-2-pyrrolidinemethanol   100224-74-6, Guanidine
      carbonate   713515-57-2
      RL: RCT (Reactant); RACT (Reactant or reagent)
         (preparation of arylindenopyridines and arylindenopyrimidines and their use
         as adenosine A2a receptor antagonists)
IT    75135-41-0P   713515-48-1P   713515-49-2P   713515-50-5P   713515-51-6P
      713515-52-7P   713515-53-8P 713515-54-9P   713515-56-1P
      RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
      (Reactant or reagent)
         (preparation of arylindenopyridines and arylindenopyrimidines and their use
         as adenosine A2a receptor antagonists)
RE.CNT  14    THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Augustin, M; JOURNAL FUER PRAKTISCHE CHEMIE 1979, V321(2), P205 HCAPLUS
(2) Burger, K; LIEBIGS ANNALEN DER CHEMIE 1984, V5, P991
(3) Demerac, S; AUSTRALIAN JOURNAL OF CHEMISTRY 1972, V25, P2651 HCAPLUS
(4) El-Rayyes, N; J CHEM ENG DATA 1987, V32, P481 HCAPLUS
(5) El-Taweel, F; BOLLETTINO CHIMICO FARMACEUTICO 2001, V140(5), P306 HCAPLUS
(6) Goerlitzer, K; PHARMAZIE 1997, V52(9), P670
(7) Hoffmann La Roche; WO 0162233 A 2001 HCAPLUS
```

```
(8) Kandeel, E; PAKISTAN JOURNAL OF SCIENTIFIC AND INDUSTRIAL RESEARCH 1986,
    V29(6), P424 HCAPLUS
(9) Kappe, C; JOURNAL OF HETEROCYCLIC CHEMISTRY 1989, P55 HCAPLUS
(10) Nippon Soda Co; WO 9308167 A 1993 HCAPLUS
(11) Nippon Soda Co Ltd; JP 2001139556 A 2001 HCAPLUS
(12) Ortho McNeil Pharm Inc; WO 02085894 A 2002 HCAPLUS
(13) Ortho McNeil Pharm Inc; WO 03088963 A 2003 HCAPLUS
(14) Rosowsky, A; J HETEROCYCLCI CHEMISTRY 1999, V36, P723 HCAPLUS
IT   70760-90-6P
     RL: PAC (Pharmacological activity); RCT (Reactant); SPN (Synthetic
     preparation); THU (Therapeutic use); BIOL (Biological study); PREP
     (Preparation); RACT (Reactant or reagent); USES (Uses)
        (preparation of arylindenopyridines and arylindenopyrimidines and their use
        as adenosine A2a receptor antagonists)
RN   70760-90-6  HCAPLUS
CN   5H-Indeno[1,2-d]pyrimidin-5-one, 2-amino-4-(methylthio)- (9CI)  (CA INDEX
     NAME)
```



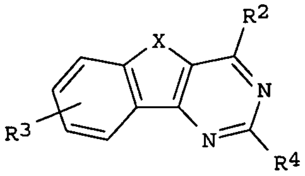
```
L18  ANSWER 2 OF 2  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   2004:533976  HCAPLUS
DN   141:89097
ED   Entered STN:  02 Jul 2004
TI   Preparation of arylindenopyridines and arylindenopyrimidines as adenosine
     A2a receptor antagonists
IN   Heintzelman, Geoffrey R.; Bullington, James Lawrence;
     Rupert, Kenneth C.
PA   USA
SO   U.S. Pat. Appl. Publ., 23 pp., Cont.-in-part of U.S. Ser. No. 259,139.
     CODEN: USXXCO
DT   Patent
LA   English
IC   ICM  A61K031-519
     ICS  A61K031-4745; C07D487-02; C07D471-02
INCL 514267000; 514291000; 544250000; 546080000
CC   28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
     Section cross-reference(s): 1, 63
FAN.CNT 5
     PATENT NO.          KIND   DATE        APPLICATION NO.         DATE
     ---------------     ----   --------    --------------------    --------
PI   US 2004127510        A1    20040701    US 2003-678562          20031003
     US 2003212089        A1    20031113    US 2002-123389          20020416
     US 2004082578        A1    20040429    US 2002-259139          20020927
     US 6903109           B2    20050607
PRAI US 2002-123389       A2    20020416
     US 2002-259139       A2    20020927
     US 2001-284465P      P     20010418
CLASS
 PATENT NO.        CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------     -----  ----------------------------------------------
 US 2004127510     ICM    A61K031-519
                   ICS    A61K031-4745; C07D487-02; C07D471-02
                   INCL   514267000; 514291000; 544250000; 546080000
 US 2004127510     NCL    514/267.000
                   ECLA   C07D221/16; C07D401/04+221+213; C07D401/04+221+215;
                          C07D401/04+241B+221; C07D401/12+233+221;
                          C07D405/04+307B+221; C07D405/04+317+221;
```

C07D405/04+319+221; C07D409/04+333B+221;
C07D491/04+307B+221B

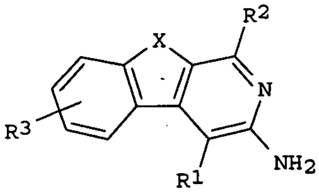
US 2003212089 NCL 514/290.000
ECLA C07D221/16; C07D401/04+221+215; C07D401/04+221+213;
C07D401/04+241B+221; C07D401/12+233+221;
C07D405/04+307B+221; C07D405/04+319+221;
C07D405/04+317+221; C07D409/04+333B+221;
C07D491/04+307B+221B

US 2004082578 NCL 514/232.800
ECLA C07D221/16; C07D401/04+221+215; C07D401/04+221+213;
C07D401/04+241B+221; C07D401/12+233+221;
C07D405/04+307B+221; C07D405/04+319+221;
C07D405/04+317+221; C07D409/04+333B+221;
C07D491/04+307B+221B

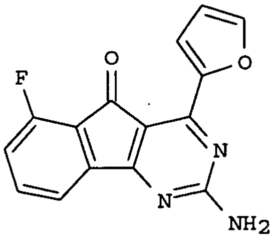
OS MARPAT 141:89097
GI



I



II



III

AB The title compds. [I or II; R1 = COR5 (wherein R5 = H, alkyl, aryl, arylalkyl), CO2R5, CN, etc.; R2 = alkyl, aryl, heteroaryl, etc.; R3 = H, halo, alkyl, etc.; R4 = H, alkyl, CH2Ph, etc.; X = CS, CO, CH2, (un)substituted CHOH], useful for treating disorders ameliorated by antagonizing adenosine A2a receptors (biol. data given), were prepared Syntheses of compds. I are described in 19 synthetic examples. E.g., a 2-step synthesis of III, was given. This invention also provides therapeutic and prophylactic methods using the instant compds. and pharmaceutical compns.

ST arylindenopyridine arylindenopyrimidine prepn adenosine A2a receptor antagonist

IT Adenosine receptors
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(A2A; preparation of arylindenopyridines and arylindenopyrimidines as adenosine A2a receptor antagonists)

IT Nervous system, disease
(Huntington's chorea, treatment or prevention of; preparation of arylindenopyridines and arylindenopyrimidines as adenosine A2a receptor antagonists)

IT Nervous system, disease
(degeneration, treatment or prevention of; preparation of arylindenopyridines and arylindenopyrimidines as adenosine A2a receptor antagonists)

IT Nervous system, disease
(multiple system atrophy, treatment or prevention of; preparation of

arylindenopyridines and arylindenopyrimidines as adenosine A2a receptor
antagonists)

IT Anti-Alzheimer's agents
Antiparkinsonian agents
Human
Nervous system agents
(preparation of arylindenopyridines and arylindenopyrimidines as adenosine
A2a receptor antagonists)

IT Mental disorder
(senile psychosis, treatment or prevention of; preparation of
arylindenopyridines and arylindenopyrimidines as adenosine A2a receptor
antagonists)

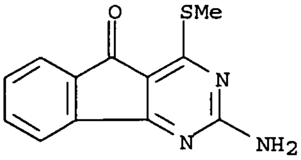
IT Alzheimer's disease
Movement disorders
Parkinson's disease
(treatment or prevention of; preparation of arylindenopyridines and
arylindenopyrimidines as adenosine A2a receptor antagonists)

IT **70760-90-6P 110117-36-7P 110117-45-8P**
439277-04-0P 713514-51-3P 713514-52-4P
713514-53-5P 713514-54-6P 713514-55-7P
713514-56-8P 713514-57-9P 713514-58-0P
713514-59-1P 713514-60-4P 713514-61-5P
713514-62-6P 713514-63-7P 713514-64-8P
713514-65-9P 713514-66-0P 713514-67-1P
713514-68-2P 713514-69-3P 713514-70-6P
713514-71-7P 713514-72-8P 713514-73-9P
713514-74-0P 713514-75-1P 713514-76-2P
713514-77-3P 713514-78-4P 713514-79-5P
713514-80-8P 713514-81-9P 713514-82-0P
713514-83-1P 713514-84-2P 713514-85-3P
713514-86-4P 713514-88-6P 713514-89-7P
713514-90-0P 713514-91-1P 713514-92-2P
713514-93-3P 713514-94-4P 713514-95-5P
713514-96-6P 713514-97-7P 713514-98-8P
713514-99-9P 713515-00-5P 713515-01-6P
713515-02-7P 713515-03-8P 713515-04-9P
713515-05-0P 713515-06-1P 713515-07-2P
713515-08-3P 713515-09-4P 713515-10-7P 713515-11-8P
713515-12-9P 713515-13-0P 713515-14-1P 713515-15-2P 713515-16-3P
713515-17-4P 713515-18-5P 713515-19-6P 713515-20-9P 713515-21-0P
713515-22-1P 713515-23-2P 713515-24-3P 713515-25-4P 713515-26-5P
713515-27-6P 713515-28-7P 713515-29-8P 713515-30-1P 713515-31-2P
713515-32-3P 713515-33-4P 713515-34-5P 713515-35-6P 713515-36-7P
713515-37-8P 713515-38-9P 713515-39-0P 713515-40-3P
713515-41-4P 713515-42-5P 713515-43-6P
713515-44-7P 713515-45-8P 713515-46-9P 713515-47-0P 713515-58-3P
RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU
(Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
(Uses)
(preparation of arylindenopyridines and arylindenopyrimidines as adenosine
A2a receptor antagonists)

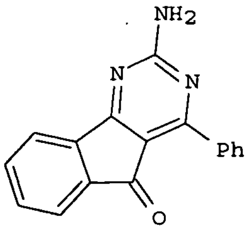
IT 50-01-1, Guanidine hydrochloride 62-53-3, Aniline, reactions 98-01-1,
2-Furaldehyde, reactions 106-95-6, Allyl bromide, reactions 109-01-3,
N-Methylpiperazine 109-64-8, 1,3-Dibromopropane 110-00-9, Furan
110-91-8, Morpholine, reactions 142-25-6, N,N,N'-Trimethylethylenediamine 762-42-5, Dimethyl acetylenedicarboxylate
1080-74-6 4584-46-7, 2-(Dimethylamino)ethyl chloride hydrochloride
34381-71-0, (S)-1-Methyl-2-pyrrolidinemethanol 100224-74-6, Guanidine
carbonate 713515-57-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of arylindenopyridines and arylindenopyrimidines as adenosine
A2a receptor antagonists)

IT 75135-41-0P **713514-87-5P** 713515-48-1P 713515-49-2P
713515-50-5P 713515-51-6P 713515-52-7P 713515-53-8P
713515-54-9P 713515-55-0P 713515-56-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

```
     (Reactant or reagent)
        (preparation of arylindenopyridines and arylindenopyrimidines as adenosine
        A2a receptor antagonists)
IT   70760-90-6P
     RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU
     (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
     (Uses)
        (preparation of arylindenopyridines and arylindenopyrimidines as adenosine
        A2a receptor antagonists)
RN   70760-90-6  HCAPLUS
CN   5H-Indeno[1,2-d]pyrimidin-5-one, 2-amino-4-(methylthio)- (9CI)  (CA INDEX
     NAME)
```



```
=> d all hitstr l19 tot

L19  ANSWER 1 OF 20  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   2005:130284  HCAPLUS
DN   142:348127
ED   Entered STN:  15 Feb 2005
TI   The discovery and synthesis of novel adenosine receptor (A2A) antagonists
AU   Matasi, Julius J.; Caldwell, John P.; Hao, Jinsong; Neustadt, Bernard;
     Arik, Leyla; Foster, Carolyn J.; Lachowicz, Jean; Tulshian, Deen B.
CS   Department of Medicinal Chemistry-CV & CNS, Schering-Plough Research
     Institute, Kenilworth, NJ, 07033, USA
SO   Bioorganic & Medicinal Chemistry Letters (2005), 15(5), 1333-1336
     CODEN: BMCLE8; ISSN: 0960-894X
PB   Elsevier B.V.
DT   Journal
LA   English
CC   1-3 (Pharmacology)
     Section cross-reference(s): 28
GI
```

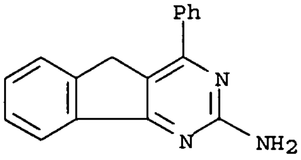


I

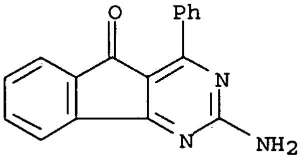
```
AB   In high throughput screening of our file compds., a novel structure I was
     identified as a potent A2A receptor antagonist with no selectivity over
     the A1 adenosine receptor.  The structure-activity relationship
     investigation using I as a template lead to identification of a novel
     class of compds. as potent and selective antagonists of A2A adenosine
     receptor.  One compound, identified to be the most potent A2A receptor
     antagonist (Ki = 0.8 nM) showed 100-fold selectivity over the A1 adenosine
     receptor.
ST   adenosine receptor antagonist indeno pyrimidine prepn SAR
IT   Adenosine receptors
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (A2A; discovery and synthesis of novel adenosine receptor A2A
        antagonists)
IT   Structure-activity relationship
        (discovery and synthesis of novel adenosine receptor A2A antagonists)
IT   97145-59-0P 110117-35-6P 713514-58-0P   848862-22-6P
     848862-24-8P 848862-25-9P 848862-26-0P
     848862-27-1P 848862-28-2P 848862-29-3P
     848862-30-6P 848862-31-7P 848862-32-8P
     848862-33-9P 848862-34-0P 848862-35-1P
     848862-36-2P 848862-37-3P 848862-38-4P
     848862-39-5P
     RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU
     (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
     (Uses)
        (discovery and synthesis of novel adenosine receptor A2A antagonists)
IT   50-01-1, Guanidine hydrochloride   67-47-0   83-33-0   98-01-1,
     2-Furancarboxaldehyde, reactions   100-52-7, Benzaldehyde, reactions
     104-88-1, reactions   122-03-2   123-75-1, Pyrrolidine, reactions
     141-82-2, Malonic acid, reactions   529-34-0   606-23-5,
     1H-Indene-1,3(2H)-dione   620-02-0   872-85-5, 4-Pyridinecarboxaldehyde
     939-97-9   1121-60-4, 2-Pyridinecarboxaldehyde   1122-91-4   1899-24-7
     3218-36-8, [1,1'-Biphenyl]-4-carboxaldehyde   7169-34-8,
     3(2H)-Benzofuranone   13623-25-1   16800-68-3   18162-48-6   24623-20-9
     28785-06-0   42348-88-9
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (discovery and synthesis of novel adenosine receptor A2A antagonists)
IT   1200-07-3P   1208-65-7P   1615-02-7P   3133-96-8P   3368-21-6P
     5381-33-9P   13026-23-8P   14548-38-0P   14548-39-1P   28784-99-8P
     42348-89-0P   162752-17-2P   170497-64-0P   848862-23-7P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (discovery and synthesis of novel adenosine receptor A2A antagonists)
IT   162752-14-9P
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (discovery and synthesis of novel adenosine receptor A2A antagonists)
RE.CNT  18    THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Aoyama, S; J Neurosci 2000, V20, P5848 HCAPLUS
(2) Baraldi, P; J Med Chem 1998, V41, P2126 HCAPLUS
(3) Baraldi, P; J Med Chem 2002, V45, P101
(4) Cheng, Y; Biochem Pharmacol 1973, V22, P3099 HCAPLUS
(5) Dionisotti, S; Br J Pharmacol 1997, V121, P353 HCAPLUS
(6) Fredholm, B; Pharmacol Rev 1994, V46, P143 HCAPLUS
(7) Jones, G; US 5380714 1995 HCAPLUS
(8) Kanda, T; Exp Neurol 2000, V162, P321 HCAPLUS
(9) Klotz, K; Arch Pharmacol 1998, V357, P1 HCAPLUS
(10) Kuwana, Y; Adv Neurol 1999, V80, P121 HCAPLUS
(11) Mori, A; J Neurosci 1996, V16, P605 HCAPLUS
(12) Ochi, M; Neuroscience 2000, V100, P53 HCAPLUS
(13) Schiffmann, S; Brain Res 1990, V519, P333 HCAPLUS
(14) Shiozaki, S; Effects of Adenosine Receptors, in Adenosine Receptors and
    Parkinson's Disease 1999, P193
(15) Shiozaki, S; Psychopharmacology 1999, V147, P90 HCAPLUS
(16) Sugasawa, T; J Org Chem 1979, V44, P578 HCAPLUS
(17) Svenningsson, P; Prog Neurobiol 1999, V59, P355 HCAPLUS
(18) Zocchi, C; J Pharmacol Exp Ther 1996, V276, P398 HCAPLUS
IT   110117-35-6P 713514-58-0P 848862-24-8P
     848862-25-9P 848862-26-0P 848862-27-1P
     848862-28-2P 848862-29-3P 848862-30-6P
```

848862-31-7P 848862-32-8P 848862-33-9P
848862-34-0P 848862-35-1P 848862-36-2P
848862-37-3P 848862-38-4P
RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(discovery and synthesis of novel adenosine receptor A2A antagonists)

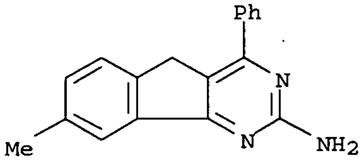
RN 110117-35-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-phenyl- (9CI) (CA INDEX NAME)



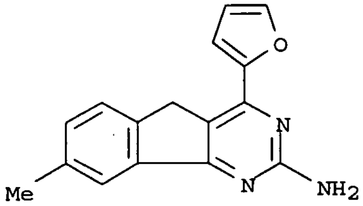
RN 713514-58-0 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-amino-4-phenyl- (9CI) (CA INDEX NAME)



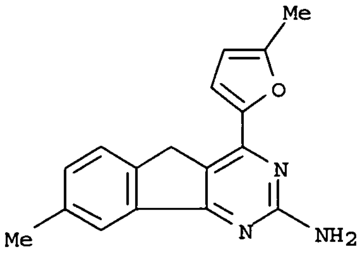
RN 848862-24-8 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 8-methyl-4-phenyl- (9CI) (CA INDEX NAME)



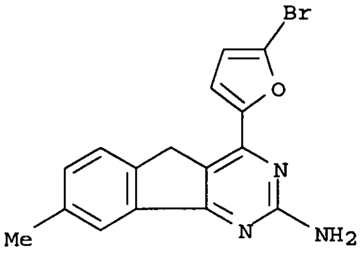
RN 848862-25-9 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(2-furanyl)-8-methyl- (9CI) (CA INDEX NAME)



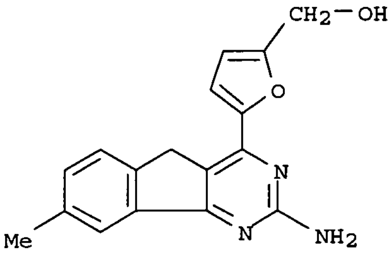
RN 848862-26-0 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 8-methyl-4-(5-methyl-2-furanyl)- (9CI) (CA INDEX NAME)



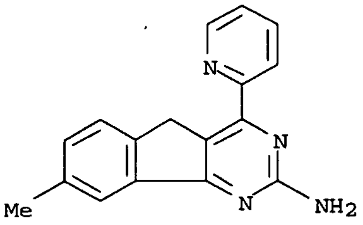
RN 848862-27-1 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(5-bromo-2-furanyl)-8-methyl- (9CI) (CA INDEX NAME)



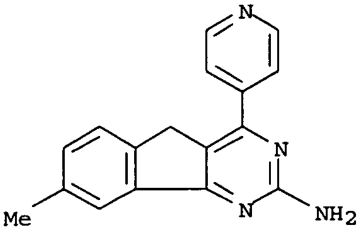
RN 848862-28-2 HCAPLUS
CN 2-Furanmethanol, 5-(2-amino-8-methyl-5H-indeno[1,2-d]pyrimidin-4-yl)- (9CI) (CA INDEX NAME)



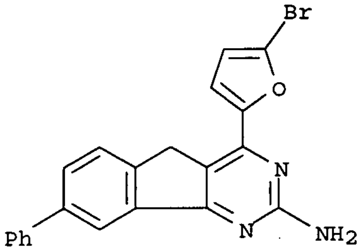
RN 848862-29-3 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 8-methyl-4-(2-pyridinyl)- (9CI) (CA INDEX NAME)



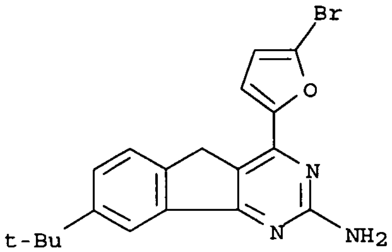
RN 848862-30-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 8-methyl-4-(4-pyridinyl)- (9CI) (CA INDEX NAME)



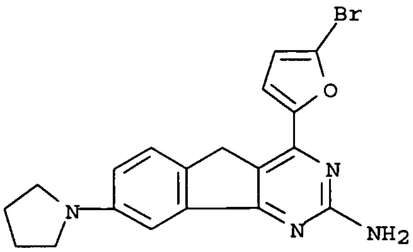
RN 848862-31-7 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(5-bromo-2-furanyl)-8-phenyl- (9CI) (CA INDEX NAME)



RN 848862-32-8 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(5-bromo-2-furanyl)-8-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

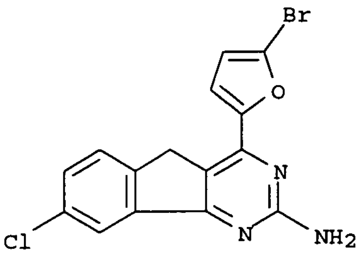


RN 848862-33-9 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(5-bromo-2-furanyl)-8-(1-pyrrolidinyl)- (9CI) (CA INDEX NAME)

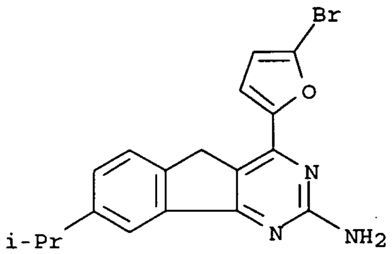


RN 848862-34-0 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(5-bromo-2-furanyl)-8-chloro- (9CI)

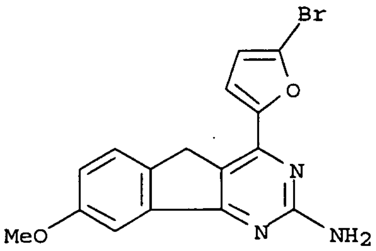
(CA INDEX NAME)



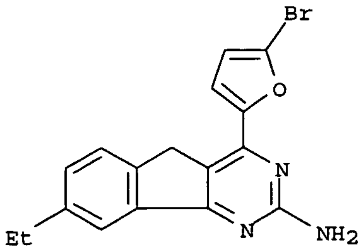
RN 848862-35-1 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(5-bromo-2-furanyl)-8-(1-methylethyl)-
(9CI) (CA INDEX NAME)



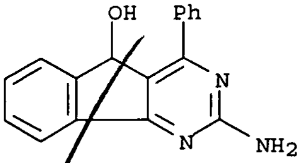
RN 848862-36-2 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(5-bromo-2-furanyl)-8-methoxy- (9CI)
(CA INDEX NAME)



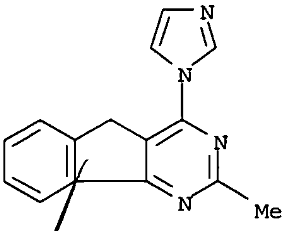
RN 848862-37-3 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(5-bromo-2-furanyl)-8-ethyl- (9CI)
(CA INDEX NAME)



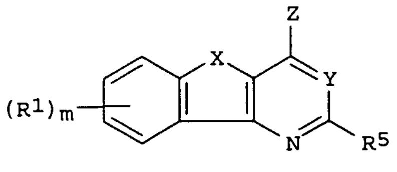
```
RN   848862-38-4  HCAPLUS
CN   5H-Indeno[1,2-d]pyrimidin-5-ol, 2-amino-4-phenyl- (9CI)  (CA INDEX NAME)
```



```
L19  ANSWER 2 OF 20  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   2004:1068076  HCAPLUS
DN   142:155775
ED   Entered STN:  14 Dec 2004
TI   Design, Synthesis, and 3D QSAR of Novel Potent and Selective Aromatase
     Inhibitors
AU   Leonetti, Francesco; Favia, Angelo; Rao, Angela; Aliano, Rosaria;
     Paluszcak, Anja; Hartmann, Rolf W.; Carotti, Angelo
CS   Dipartimento Farmaco-Chimico, University of Bari, Bari, I-70125, Italy
SO   Journal of Medicinal Chemistry (2004), 47(27), 6792-6803
     CODEN: JMCMAR; ISSN: 0022-2623
PB   American Chemical Society
DT   Journal
LA   English
CC   27-14 (Heterocyclic Compounds (One Hetero Atom))
     Section cross-reference(s): 1, 25, 28
AB   The design, synthesis, and biol. evaluation of a series of new aromatase
     inhibitors bearing an imidazole or triazole ring linked to a fluorene,
     indenodiazine, or coumarin scaffold are reported.  E.g., the preparation of
     coumarins followed a common synthetic scheme, characterized by an initial
     NBS-AIBN (or benzoyl peroxide) bromination of the appropriate
     methylcoumarinin in CCl4 followed by an SN reaction with imidazole or
     1,2,4- (or 1,2,3)-triazole.  Properly substituted coumarin derivs.
     displayed the highest aromatase inhibitory potency and selectivity over
     17-alpha-hydroxylase/17-20 lyase.  The modeling of the aromatase
     inhibition data by Comparative Mol. Field Anal. (CoMFA/GOLPE 3D QSAR
     approach) led to the development of a PLS model with good fitting and
     predictive powers (n = 22, ONC = 3, r2 = 0.949, s = 0.216, and q2 =
     0.715).  The relationship between aromatase inhibition and the steric and
     electrostatic fields generated by the examined azole inhibitors enables a
     clear understanding of the nature and spatial location of the main
     interactions modulating the aromatase inhibitory potency.
ST   imidazolyl triazolyl fluorene indenodiazine coumarin prepn selective
     aromatase inhibitor
IT   QSAR (structure-activity relationship)
        (preparation of imidazolyl- or triazolyl-substituted fluorenes,
        indenodiazines, coumarins as selective aromatase inhibitors)
IT   9039-48-9, Aromatase
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (preparation of imidazolyl- or triazolyl-substituted fluorenes,
        indenodiazines, coumarins as selective aromatase inhibitors)
IT   828265-61-8P
     RL: PAC (Pharmacological activity); RCT (Reactant); SPN (Synthetic
     preparation); BIOL (Biological study); PREP (Preparation); RACT (Reactant
     or reagent)
        (preparation of imidazolyl- or triazolyl-substituted fluorenes,
        indenodiazines, coumarins as selective aromatase inhibitors)
IT   841-97-4P   27608-12-4P   35214-35-8P, 1-(9H-Fluoren-9-yl)-1H-imidazole
     177851-18-2P   179098-14-7P   828265-46-9P   828265-48-1P   828265-49-2P
     828265-50-5P   828265-51-6P   828265-52-7P   828265-54-9P   828265-55-0P
     828265-56-1P   828265-57-2P   828265-58-3P   828265-59-4P   828265-60-7P
     828265-62-9P   828265-63-0P   828265-64-1P   828265-65-2P   828265-66-3P
     828265-67-4P
     RL: PAC (Pharmacological activity); SPN (Synthetic preparation); BIOL
     (Biological study); PREP (Preparation)
        (preparation of imidazolyl- or triazolyl-substituted fluorenes,
        indenodiazines, coumarins as selective aromatase inhibitors)
IT   92-48-8   93-35-6   95-01-2, 2,4-Dihydroxybenzaldehyde   100-39-0, Benzyl
     bromide   108-46-3, Resorcinol, reactions   108-95-2, Phenol, reactions
     137-40-6, Sodium propionate   141-97-9, Ethyl acetoacetate   288-32-4,
     Imidazole, reactions   288-36-8, 1H-1,2,3-Triazole   288-88-0,
     1H-1,2,4-Triazole   504-15-4, 5-Methylresorcinol   608-25-3,
     2-Methylresorcinol   638-07-3, Ethyl 4-chloro-3-oxobutanoate   713-68-8,
     3-Phenoxyphenol   1076-38-6   1940-57-4, 9-Bromo-9H-fluorene   2445-83-2
     10488-87-6   10601-80-6, Ethyl 3,3-diethoxypropionate   17575-15-4
     23028-23-1   26377-17-3, Ethyl 3-oxo-3-pyridin-4-ylpropanoate   35231-44-8
     55135-66-5   136716-40-0   828265-43-6   828265-47-0
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (preparation of imidazolyl- or triazolyl-substituted fluorenes,
        indenodiazines, coumarins as selective aromatase inhibitors)
IT   2732-17-4P   4069-67-4P   7249-26-5P   14002-94-9P   22321-96-6P
     25392-41-0P   41295-54-9P   50465-95-7P   53666-74-3P   53878-12-9P
     54431-13-9P   54745-57-2P   71386-93-1P   72136-39-1P   90818-60-3P
     92906-36-0P   133932-20-4P   828265-44-7P   828265-68-5P   828265-69-6P
     828265-70-9P   828265-71-0P   828265-72-1P   828265-73-2P   828265-74-3P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation of imidazolyl- or triazolyl-substituted fluorenes,
        indenodiazines, coumarins as selective aromatase inhibitors)
IT   828265-45-8P
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (preparation of imidazolyl- or triazolyl-substituted fluorenes,
        indenodiazines, coumarins as selective aromatase inhibitors)
RE.CNT  21     THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Ahmed, S; Biorg Med Chem Lett 2002, V12, P2391 HCAPLUS
(2) Arora, A; J Am Geriatr Soc 2004, V52, P611
(3) Banting, L; Prog Med Chem 1989, V26, P253 HCAPLUS
(4) Brueggemeier, R; Expert Rev Anticancer Ther 2002, V2, P181 HCAPLUS
(5) Brueggemeier, R; J Steroid Biochem Mol Biol 2001, V79, P75 HCAPLUS
(6) Buzdar, A; Clin Breast Cancer 2003, 4 Suppl 2, PS84
(7) Goss, P; Endocr Relat Cancer 1999, V6, P325 HCAPLUS
(8) Lonard, D; Steroids 2002, V67, P15 HCAPLUS
(9) Malini, B; J Steroid Biochem Mol Biol 2000, V75, P253 HCAPLUS
(10) Milla-Santos, A; Am J Clin Oncol 2003, V26, P317 HCAPLUS
(11) Miller, W; Best Pract Res Clin Endocrinol Metab 2004, V18, P1 HCAPLUS
(12) Miller, W; Cancer Treat Rev 1989, V16, P83 MEDLINE
(13) Miller, W; Semin Oncol 2003, V30, P3 HCAPLUS
(14) Mokbel, K; Int J Clin Oncol 2002, V7, P279 HCAPLUS
(15) Nicholls, H; Trends Mol Med 2002, V8, PS12
(16) Park, W; Trends Mol Med 2002, V8, P82 HCAPLUS
(17) Pasqualini, J; J Steroid Biochem Mol Biol 1999, V69, P287 HCAPLUS
(18) Recanatini, M; Med Res Rev 2002, V22, P282 HCAPLUS
(19) Santen, R; Cancer 1977, V39, P2948 MEDLINE
(20) Suzuki, T; J Steroid Biochem Mol Biol 2003, V86, P449 HCAPLUS
(21) Wong, Z; Br J Cancer 2004, V90, P20 HCAPLUS
IT   828265-45-8P
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (preparation of imidazolyl- or triazolyl-substituted fluorenes,
        indenodiazines, coumarins as selective aromatase inhibitors)
RN   828265-45-8  HCAPLUS
CN   5H-Indeno[1,2-d]pyrimidine, 4-(1H-imidazol-1-yl)-2-methyl- (9CI)  (CA
     INDEX NAME)
```



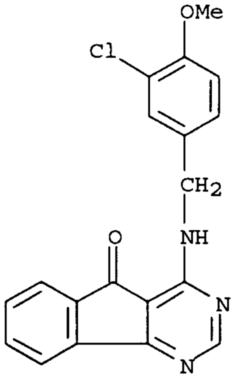
```
L19  ANSWER 3 OF 20  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   2001:369709  HCAPLUS
DN   134:366812
ED   Entered STN:  23 May 2001
TI   Preparation of indenopyridines or indenopyrimidines as cGMP-specific
     phosphodiesterase inhibitors
IN   Ito, Kunihito; Umeda, Nobihiro; Uchida, Seiichi; Oshiki, Kousuke;
     Horikoshi, Hiromi; Mochizuki, Nobuo
PA   Nippon Soda Co., Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 40 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
IC   ICM  C07D221-06
     ICS  A61P009-04; A61P009-10; A61P009-12; A61P011-00; A61P011-16;
          A61P013-12; A61P015-10; A61P025-28; A61P027-06; A61P037-02;
          A61P043-00; C07D239-70; C07D401-04; C07D401-14; C07D403-04;
          A61K031-444; A61K031-497; A61K031-517
CC   27-18 (Heterocyclic Compounds (One Hetero Atom))
     Section cross-reference(s): 1
FAN.CNT 1
     PATENT NO.          KIND   DATE          APPLICATION NO.        DATE
     ---------------     ----   --------      --------------------   --------
PI   JP 2001139556        A2    20010522      JP 2000-72712          20000315
PRAI JP 1999-73646        A     19990318
     JP 1999-247435       A     19990901
CLASS
 PATENT NO.       CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------    -----  ----------------------------------------------
 JP 2001139556    ICM    C07D221-06
                  ICS    A61P009-04; A61P009-10; A61P009-12; A61P011-00;
                         A61P011-16; A61P013-12; A61P015-10; A61P025-28;
                         A61P027-06; A61P037-02; A61P043-00; C07D239-70;
                         C07D401-04; C07D401-14; C07D403-04; A61K031-444;
                         A61K031-497; A61K031-517
OS   MARPAT 134:366812
GI
```



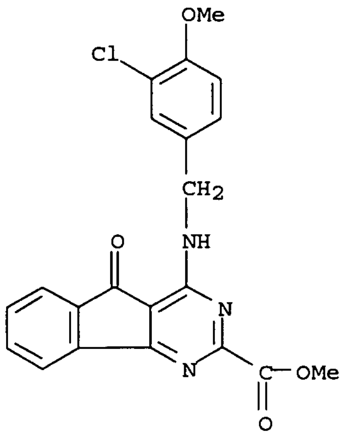
I

```
AB   Indenopyridines or indenopyrimidines I [Z = NHCR2R3R4; R1 = NO2, halo,
     C1-6 (halo)alkyl, C1-6 (halo)alkoxy, C1-6 alkylthio, C1-6 alkoxycarbonyl,
     (alkyl)carbamoyl; X = CH2, CO; Y = N, CH; m = 0-4; R2, R3 = H, OH, halo,
     C1-6 (halo)alkyl, C1-6 alkoxy, (un)substituted Ph; R4 = H, C1-6 alkyl,
     C3-8 cycloalkyl, (un)substituted Ph, (un)substituted naphthyl, etc.; R5 =
     H, cyano, SPh, C1-6 haloalkyl, C1-6 alkylthio, C3-8 cycloalkyl, etc.] are
     prepared by reaction of I (Z = SMe, SO2Me, halo) with H2NCR2R3R4 (R2-R4 =
     same as above).  I (Z = SO2Me, R1 = H, X = CO, Y = CH, R5 = 4-pyridyl)
     (0.2 g) was treated with benzylamine in DMF at 100° for 1 h to give
     0.11 g I (Z = NHCH2Ph, R1 = H, X = CO, Y = CH, R5 = 4-pyridyl), which in
     vitro showed vasodilatory effect on rat thoracic aorta with EC50 of 160
     nM, vs. 6.1 nM, for Sildenafil.
ST   cGMP phosphodiesterase inhibitor indenopyridine indenopyrimidine prepn;
     vasodilator indenopyridine indenopyrimidine prepn
IT   Bronchi
        (bronchitis; preparation of indenopyridines or indenopyrimidines as
        cGMP-specific phosphodiesterase inhibitors)
IT   Artery, disease
        (coronary, restenosis; preparation of indenopyridines or indenopyrimidines
        as cGMP-specific phosphodiesterase inhibitors)
IT   Mental disorder
        (dementia; preparation of indenopyridines or indenopyrimidines as
        cGMP-specific phosphodiesterase inhibitors)
IT   Heart, disease
     Lung, disease
        (edema; preparation of indenopyridines or indenopyrimidines as cGMP-specific
        phosphodiesterase inhibitors)
IT   Heart, disease
     Kidney, disease
        (failure; preparation of indenopyridines or indenopyrimidines as
        cGMP-specific phosphodiesterase inhibitors)
IT   Sexual behavior
        (impotence; preparation of indenopyridines or indenopyrimidines as
        cGMP-specific phosphodiesterase inhibitors)
IT   Heart, disease
        (infarction; preparation of indenopyridines or indenopyrimidines as
        cGMP-specific phosphodiesterase inhibitors)
IT   Antianginal agents
     Antiarteriosclerotics
     Antiasthmatics
     Antiglaucoma agents
     Antihypertensives
     Immunodeficiency
     Vasodilators
        (preparation of indenopyridines or indenopyrimidines as cGMP-specific
        phosphodiesterase inhibitors)
IT   340164-41-2P   340164-42-3P   340164-43-4P   340164-44-5P   340164-45-6P
     340164-46-7P   340164-47-8P   340164-48-9P   340164-49-0P   340164-50-3P
     340164-51-4P   340164-52-5P   340164-53-6P   340164-54-7P   340164-55-8P
     340164-56-9P   340164-57-0P   340164-58-1P   340164-59-2P   340164-60-5P
     340164-61-6P   340164-62-7P   340164-63-8P   340164-64-9P   340164-65-0P
     340164-66-1P   340164-67-2P   340164-68-3P 340164-69-4P
     340164-70-7P 340164-71-8P 340164-72-9P
     340164-73-0P 340164-74-1P 340164-75-2P
     340164-76-3P   340164-77-4P   340164-78-5P   340164-79-6P
     340164-80-9P 340164-81-0P 340164-82-1P
     340164-83-2P 340164-84-3P 340164-85-4P
     340164-86-5P 340164-87-6P   340164-88-7P
     340164-89-8P 340164-90-1P 340164-91-2P
     340164-92-3P   340164-93-4P 340164-94-5P 340164-95-6P
     340164-96-7P   340164-97-8P   340164-98-9P   340164-99-0P   340165-00-6P
     340165-01-7P   340165-63-1P
     RL: BAC (Biological activity or effector, except adverse); BSU (Biological
     study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use);
     BIOL (Biological study); PREP (Preparation); USES (Uses)
        (preparation of indenopyridines or indenopyrimidines as cGMP-specific
        phosphodiesterase inhibitors)
IT   9068-52-4, CGMP phosphodiesterase
     RL: BSU (Biological study, unclassified); MSC (Miscellaneous); BIOL
     (Biological study)
        (preparation of indenopyridines or indenopyrimidines as cGMP-specific
```

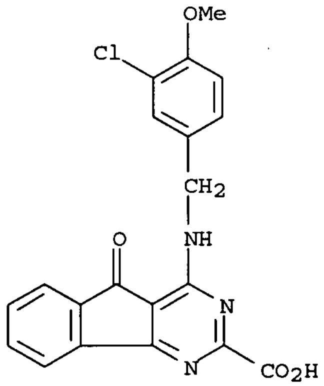
phosphodiesterase inhibitors)
IT 100-46-9, Benzylamine, reactions 65472-87-9 115514-77-7,
3-Chloro-4-methoxybenzylamine 150365-47-2 203054-46-0 340165-02-8
340166-59-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of indenopyridines or indenopyrimidines as cGMP-specific
phosphodiesterase inhibitors)
IT **150365-49-4P** **340165-03-9P** **340165-04-0P**
340165-05-1P **340165-06-2P** 340165-08-4P
340165-09-5P **340165-12-0P** **340165-14-2P**
340165-16-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(preparation of indenopyridines or indenopyrimidines as cGMP-specific
phosphodiesterase inhibitors)
IT **340164-69-4P** **340164-71-8P** **340164-72-9P**
340164-73-0P **340164-74-1P** **340164-75-2P**
340164-80-9P **340164-81-0P** **340164-82-1P**
340164-83-2P **340164-84-3P** **340164-85-4P**
340164-86-5P **340164-87-6P** **340164-89-8P**
340164-90-1P **340164-91-2P** **340164-94-5P**
340164-95-6P **340165-01-7P**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological
study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use);
BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of indenopyridines or indenopyrimidines as cGMP-specific
phosphodiesterase inhibitors)
RN 340164-69-4 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-[[(3-chloro-4-
methoxyphenyl)methyl]amino]- (9CI) (CA INDEX NAME)



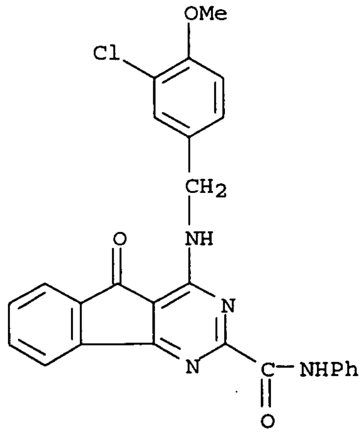
RN 340164-71-8 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxylic acid, 4-[[(3-chloro-4-
methoxyphenyl)methyl]amino]-5-oxo-, methyl ester (9CI) (CA INDEX NAME)



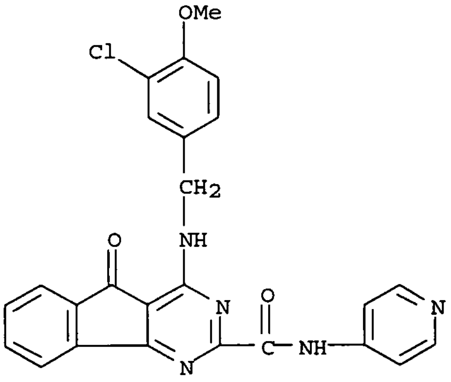
RN 340164-72-9 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxylic acid, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo- (9CI) (CA INDEX NAME)



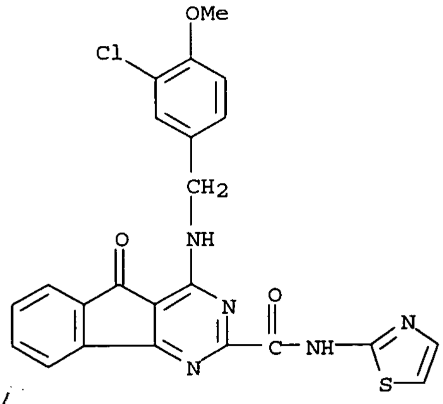
RN 340164-73-0 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo-N-phenyl- (9CI) (CA INDEX NAME)



RN 340164-74-1 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo-N-4-pyridinyl- (9CI) (CA INDEX NAME)

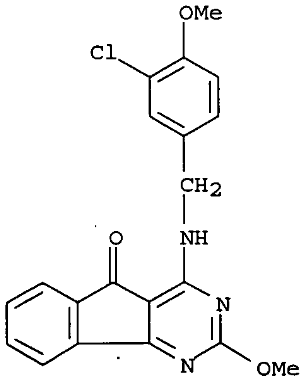


RN 340164-75-2 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo-N-2-thiazolyl- (9CI) (CA INDEX NAME)

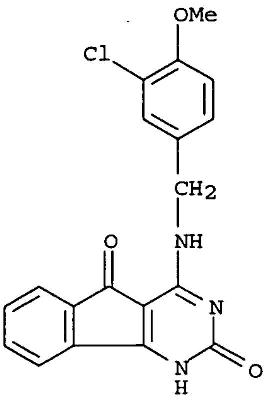


✓

RN 340164-80-9 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-2-methoxy- (9CI) (CA INDEX NAME)

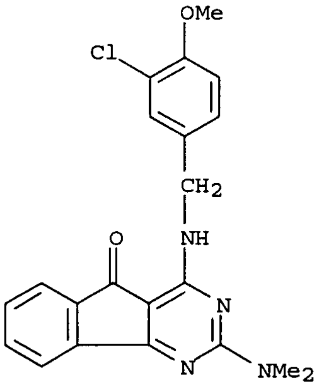


RN 340164-81-0 HCAPLUS
CN 1H-Indeno[1,2-d]pyrimidine-2,5-dione, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]- (9CI) (CA INDEX NAME)



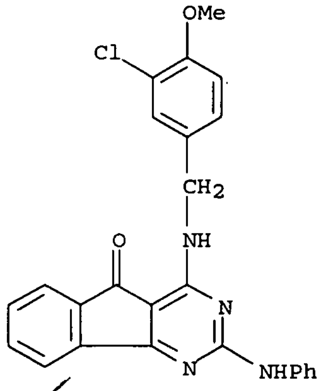
✓

RN 340164-82-1 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-2-(dimethylamino)- (9CI) (CA INDEX NAME)

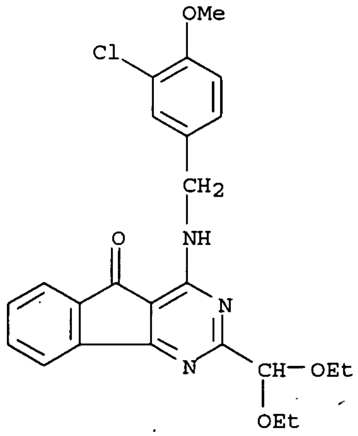


✓

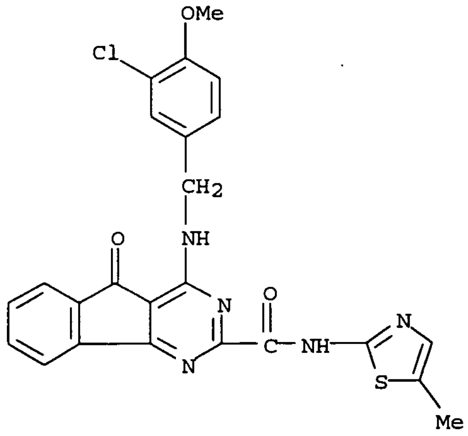
RN 340164-83-2 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-2-(phenylamino)- (9CI) (CA INDEX NAME)



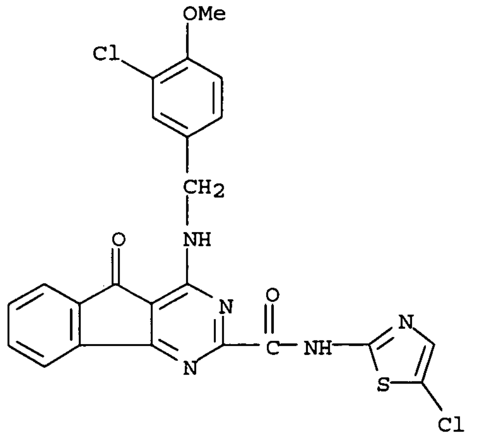
RN 340164-84-3 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-2-(diethoxymethyl)- (9CI) (CA INDEX NAME)



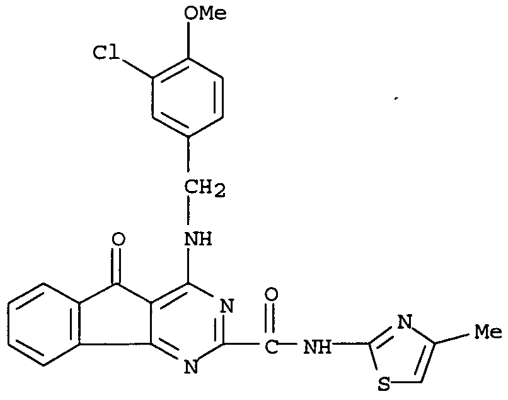
RN 340164-85-4 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-N-(5-methyl-2-thiazolyl)-5-oxo- (9CI) (CA INDEX NAME)



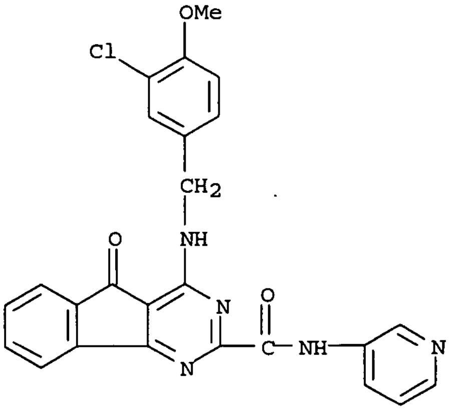
RN 340164-86-5 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-N-(5-chloro-2-thiazolyl)-5-oxo- (9CI) (CA INDEX NAME)



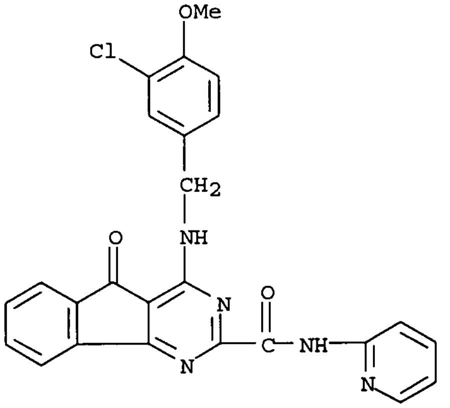
RN 340164-87-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-N-(4-methyl-2-thiazolyl)-5-oxo- (9CI) (CA INDEX NAME)



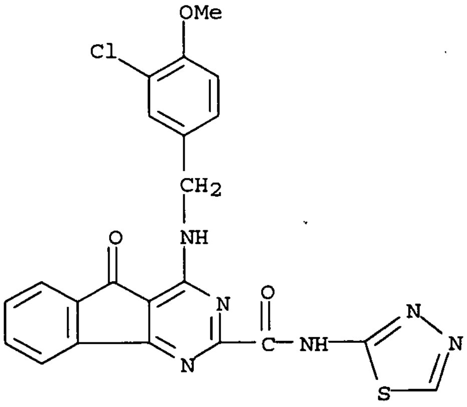
RN 340164-89-8 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo-N-3-pyridinyl- (9CI) (CA INDEX NAME)



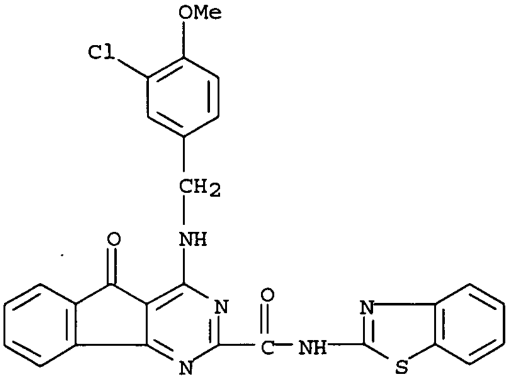
RN 340164-90-1 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo-N-2-pyridinyl- (9CI) (CA INDEX NAME)



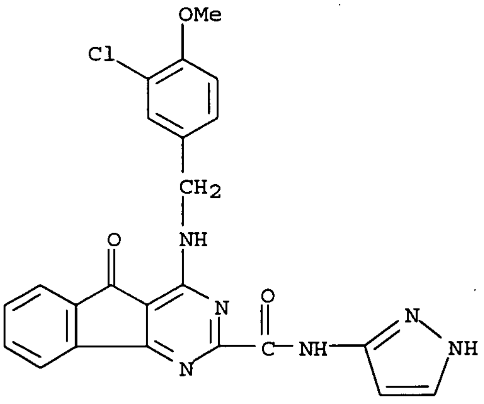
RN 340164-91-2 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo-N-1,3,4-thiadiazol-2-yl- (9CI) (CA INDEX NAME)



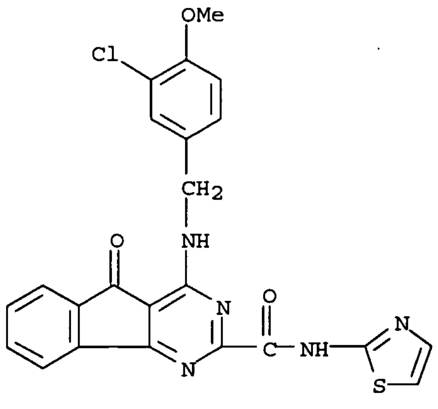
RN 340164-94-5 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, N-2-benzothiazolyl-4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo- (9CI) (CA INDEX NAME)



RN 340164-95-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo-N-1H-pyrazol-3-yl- (9CI) (CA INDEX NAME)



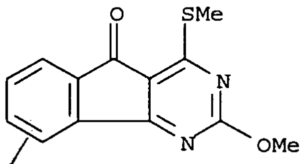
RN 340165-01-7 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxamide, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo-N-2-thiazolyl-, monohydrochloride (9CI) (CA INDEX NAME)



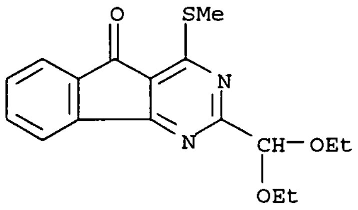
● HCl

IT 150365-49-4P 340165-03-9P 340165-04-0P
340165-05-1P 340165-06-2P 340165-09-5P
340165-12-0P 340165-14-2P 340165-16-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(preparation of indenopyridines or indenopyrimidines as cGMP-specific
phosphodiesterase inhibitors)

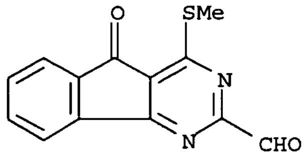
RN 150365-49-4 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-methoxy-4-(methylthio)- (9CI) (CA
INDEX NAME)



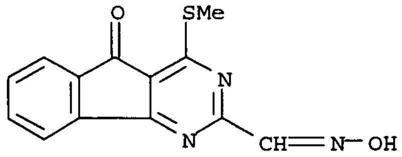
RN 340165-03-9 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-(diethoxymethyl)-4-(methylthio)- (9CI)
(CA INDEX NAME)



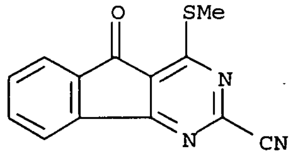
RN 340165-04-0 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxaldehyde, 4-(methylthio)-5-oxo- (9CI)
(CA INDEX NAME)



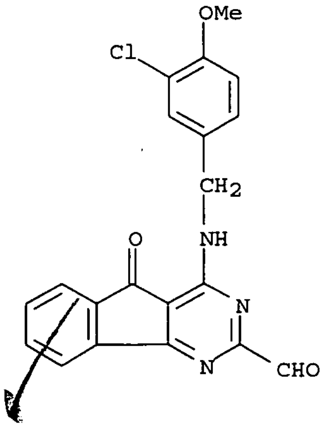
RN 340165-05-1 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxaldehyde, 4-(methylthio)-5-oxo-, 2-oxime (9CI) (CA INDEX NAME)



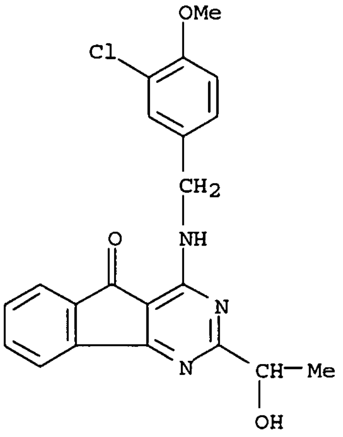
RN 340165-06-2 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carbonitrile, 4-(methylthio)-5-oxo- (9CI) (CA INDEX NAME)



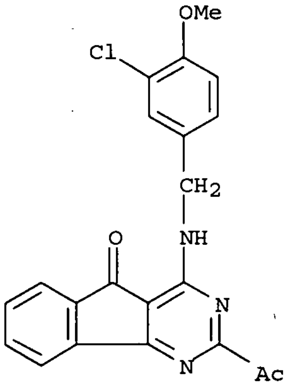
RN 340165-09-5 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2-carboxaldehyde, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-5-oxo- (9CI) (CA INDEX NAME)



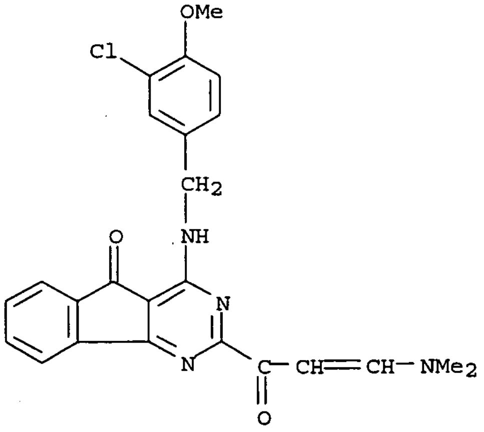
RN 340165-12-0 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-2-(1-hydroxyethyl)- (9CI) (CA INDEX NAME)



RN 340165-14-2 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-acetyl-4-[[(3-chloro-4-methoxyphenyl)methyl]amino]- (9CI) (CA INDEX NAME)



RN 340165-16-4 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-[[(3-chloro-4-methoxyphenyl)methyl]amino]-2-[3-(dimethylamino)-1-oxo-2-propenyl]- (9CI) (CA INDEX NAME)



L19 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:15514 HCAPLUS
DN 134:204940
ED Entered STN: 08 Jan 2001
TI Efficacies of lipophilic inhibitors of dihydrofolate reductase against parasitic protozoa
AU Lau, Hollis; Ferlan, Jill T.; Brophy, Victoria Hertle; Rosowsky, Andre; Sibley, Carol Hopkins
CS Department of Genetics, University of Washington, Seattle, WA, 98195-7360, USA
SO Antimicrobial Agents and Chemotherapy (2001), 45~~(1)~~, 187-195
CODEN: AMACCQ; ISSN: 0066-4804
PB American Society for Microbiology
DT Journal
LA English
CC 10-5 (Microbial, Algal, and Fungal Biochemistry)
AB Competitive inhibitors of dihydrofolate reductase (DHFR) are used in chemotherapy or prophylaxis of many microbial pathogens, including the eukaryotic parasites Plasmodium falciparum and Toxoplasma gondii. Unfortunately, point mutations in the DHFR gene can confer resistance to inhibitors specific to these pathogens. We have developed a rapid system for testing inhibitors of DHFRs from a variety of parasites. We replaced the DHFR gene from the budding yeast Saccharomyces cerevisiae with the DHFR-coding region from humans, P. falciparum, T. gondii, Pneumocystis carinii, and bovine or human-derived Cryptosporidium parvum. We studied 84 dicyclic and tricyclic 2,4-diaminopyrimidine derivs. in this heterologous system and identified those most effective against the DHFR enzymes from each of the pathogens. Among these compds., six tetrahydroquinazolines were effective inhibitors of every strain tested, but they also inhibited the human DHFR and were not selective for the parasites. However, two quinazolines and four tetrahydroquinazolines were both potent and selective inhibitors of the P. falciparum DHFR. These compds. show promise for development as antimalarial drugs.
ST lipophilic inhibitor dihydrofolate reductase protozoa; protozoacide dihydrofolate reductase lipophilic inhibitor; antimalarial dihydrofolate reductase lipophilic inhibitor
IT Gene, animal
Gene, microbial
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(dfr; efficacies of lipophilic inhibitors of dihydrofolate reductase against parasitic protozoa tested in genetically engineered yeast)
IT Drug resistance
Mutation
(efficacies of lipophilic inhibitors against pyrimethamine-resistant dihydrofolate reductase mutants of parasitic protozoa)
IT Antimalarials
Cryptosporidium parvum
Plasmodium falciparum
Pneumocystis carinii
Protozoacides
Toxoplasma gondii
(efficacies of lipophilic inhibitors of dihydrofolate reductase against parasitic protozoa)
IT Molecular cloning
(efficacies of lipophilic inhibitors of dihydrofolate reductase against parasitic protozoa tested in genetically engineered yeast)
IT Saccharomyces cerevisiae
(recombinant; efficacies of lipophilic inhibitors of dihydrofolate reductase against parasitic protozoa tested in genetically engineered yeast)
IT 58-14-0, Pyrimethamine
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(efficacies of lipophilic inhibitors against pyrimethamine-resistant

dihydrofolate reductase mutants of parasitic protozoa)

IT 708-74-7 4215-07-0 13658-16-7 33987-14-3 37836-90-1 43111-53-1
43111-54-2 43111-55-3 49647-21-4 49647-22-5 49647-26-9
49647-27-0 49647-28-1 49870-02-2 56892-82-1 56892-83-2
56892-86-5 62703-18-8 62703-19-9 62703-21-3 62703-23-5
62703-24-6 62703-25-7 62703-27-9 62703-29-1 **95140-64-0**,
5H-Indeno[1,2-d]pyrimidine-2,4-diamine 123242-02-4 152093-72-6
152093-73-7 152093-77-1 159308-73-3 159308-75-5 159308-76-6
159308-78-8 159308-79-9 159308-81-3 161201-05-4 161201-06-5
161201-07-6 161201-08-7 161201-10-1 161201-14-5 162335-22-0
162335-23-1 162335-24-2 164596-25-2 164596-26-3 164596-27-4
164596-28-5 180004-41-5 187795-76-2 187795-77-3 187795-80-8
197461-24-8 197461-26-0 197461-28-2 197461-33-9 204510-63-4
221532-10-1 221532-14-5 221532-17-8 221532-18-9 221532-21-4
221532-23-6 221532-24-7 221532-25-8 221532-27-0 221532-33-8
221532-47-4 243663-93-6 243663-96-9 251658-84-1 251658-85-2
251658-86-3 251658-87-4 251658-88-5 251658-90-9 328402-39-7
328402-40-0 328402-41-1 328402-42-2 328402-43-3 328402-44-4
328402-55-7
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(efficacies of lipophilic inhibitors of dihydrofolate reductase against parasitic protozoa)

IT 9002-03-3P, Dihydrofolate reductase
RL: BPN (Biosynthetic preparation); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation); PROC (Process)
(efficacies of lipophilic inhibitors of dihydrofolate reductase against parasitic protozoa tested in genetically engineered yeast)

RE.CNT 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD

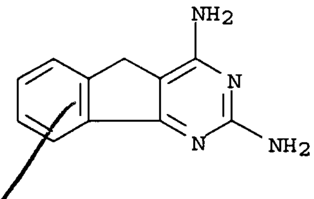
RE

(1) Anon; Current protocols in molecular biology 1991, V2
(2) Anon; Guide to yeast genetics and molecular biology 1991, V194
(3) Basco, L; Am J Trop Med Hyg 1998, V58, P369 HCAPLUS
(4) Blakley, R; Adv Enzymol Mol Biol 1995, V70, P23 HCAPLUS
(5) Brophy, V; Antimicrob Agents Chemother 2000, V44, P1019 HCAPLUS
(6) Bzik, D; Proc Natl Acad Sci USA 1987, V84, P8360 HCAPLUS
(7) Chaykovsky, M; J Med Chem 1974, V17, P1212 HCAPLUS
(8) Chaykovsky, M; J Med Chem 1975, V18, P909 HCAPLUS
(9) Chio, L; Antimicrob Agents Chemother 1993, V37, P1914 HCAPLUS
(10) Clyde, D; East Afr Med J 1953, V31, P41
(11) Cowman, A; Mol Genet Drug Resist 1997, V3, P221 HCAPLUS
(12) Edman, J; Proc Natl Acad Sci USA 1989, V86, P8625 HCAPLUS
(13) Fling, M; Gene 1988, V63, P165 HCAPLUS
(14) Hitchings, G; Adv Enzymol 1965, V27, P417 MEDLINE
(15) Huang, T; Gene 1992, V121, P167 HCAPLUS
(16) Huennekens, F; Adv Enzyme Regul 1994, V34, P397 HCAPLUS
(17) Huennekens, F; Protein Sci 1996, V5, P1201 HCAPLUS
(18) Hyde, J; Pharmacol Ther 1990, V48, P45
(19) Jelinek, T; Trop Med Int Health 1998, V3, P605 HCAPLUS
(20) Kuyper, L; J Med Chem 1996, V39, P892 HCAPLUS
(21) Milhous, W; Antimicrob Agents Chemother 1985, V27, P525 HCAPLUS
(22) Mookherjee, S; Am J Trop Med Hyg 1999, V61, P131 HCAPLUS
(23) Nzila-Mounda, A; Antimicrob Agents Chemother 1998, V42, P164 HCAPLUS
(24) Peters, W; Chemotherapy and drug resistance in malaria, 2nd ed 1987
(25) Plowe, C; Am J Trop Med Hyg 1996, V55, P467 MEDLINE
(26) Prendergast, N; Biochemistry (Moscow) 1988, V27, P3664 HCAPLUS
(27) Reynolds, M; J Biol Chem 1998, V273, P3461 HCAPLUS
(28) Rosowsky, A; J Heterocycl Chem 1972, V9, P637 HCAPLUS
(29) Rosowsky, A; J Heterocycl Chem 1972, V9, P645 HCAPLUS
(30) Rosowsky, A; J Heterocycl Chem 1995, V32, P335 HCAPLUS
(31) Rosowsky, A; J Heterocycl Chem 1996, V33, P1959 HCAPLUS
(32) Rosowsky, A; J Heterocycl Chem 1999, V36, P723 HCAPLUS
(33) Rosowsky, A; J Med Chem 1973, V16, P869 HCAPLUS
(34) Rosowsky, A; J Med Chem 1978, V21, P925

(35) Rosowsky, A; J Med Chem 1993, V36, P3103 HCAPLUS
(36) Rosowsky, A; J Med Chem 1994, V37, P4522 HCAPLUS
(37) Rosowsky, A; J Med Chem 1995, V38, P2615 HCAPLUS
(38) Rosowsky, A; J Med Chem 1995, V38, P745 HCAPLUS
(39) Rosowsky, A; J Med Chem 1997, V40, P3694 HCAPLUS
(40) Rosowsky, A; J Med Chem 1998, V41, P913 HCAPLUS
(41) Rosowsky, A; J Med Chem 1999, V42, P1007 HCAPLUS
(42) Rosowsky, A; J Med Chem 1999, V42, P4853 HCAPLUS
(43) Seeger, D; J Am Chem Soc 1949, V71, P1753 HCAPLUS
(44) Sibley, C; Methods 1997, V13, P190 HCAPLUS
(45) Sikorski, R; Genetics 1989, V122, P19 HCAPLUS
(46) Vasquez, J; Mol Biochem Parasitol 1996, V79, P153 HCAPLUS
(47) Wang, P; Mol Biochem Parasitol 1997, V89, P161 HCAPLUS
(48) Wooden, J; Mol Biochem Parasitol 1997, V85, P25 HCAPLUS
(49) Zumla, A; Parasitology 1992, V105, PS93

IT **95140-64-0**, 5H-Indeno[1,2-d]pyrimidine-2,4-diamine
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(efficacies of lipophilic inhibitors of dihydrofolate reductase against parasitic protozoa)

RN 95140-64-0 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-2,4-diamine (9CI) (CA INDEX NAME)



L19 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1999:457817 HCAPLUS
DN 131:214250
ED Entered STN: 27 Jul 1999
TI One-step synthesis of novel 2,4-diaminopyrimidine antifolates from bridged alicyclic ketones and cyanoguanidine
AU Rosowsky, Andre; Papoulis, Andrew T.; Queener, Sherry F.
CS Dana-Farber Cancer Institute and Department of Biological Chemistry and Molecular Pharmacology, Harvard Medical School, Boston, MA, 02115, USA
SO Journal of Heterocyclic Chemistry (1999), 36(3), 723-728
CODEN: JHTCAD; ISSN: 0022-152X
PB HeteroCorporation
DT Journal
LA English
CC 28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 1

AB A convenient one-step reaction with cyanoguanidine was used to convert alicyclic ketones to previously undescribed 2,4-diamino-5,6,7,8-tetrahydroquinazolines with a one-, two-, or three-carbon bridge in the carbocyclic ring. Although the yields of the desired products were modest, the principal advantage of this one-step process was that it provided easy access to a variety of novel bridged heterocyclic ring systems whose synthesis from sterically hindered ketones by other methods would have required multiple steps with an even lower overall yield. The products were tested as inhibitors of dihydrofolate reductases from Pneumocystis carinii, Toxoplasma gondii, and rat liver with a view to examining the effect of a space-filling bridge on binding. The most potent and selective compound in the group was 4,6-diamino-3,5-diazatricyclo[7.2.1.02,7]dodeca-2,4,6-triene (5,6,7,8-tetrahydro-6,8-ethanoquinazoline-2,4-diamine), whose potency and selectivity approached those of trimethoprim, a drug commonly used to treat P. carinii and T. gondii infection. 5,6,7,8-Tetrahydro-5,8-methanoquinazoline-2,4-diamine

(3,5-diamino-4,6-diazatricyclo[6.2.1.02,7]-undeca-2,4,6-triene) having a one-carbon rather than a two-carbon bridge showed similar potency and selectivity against the T. gondii enzyme, but was a weak and nonselective inhibitor of P. carinii dihydrofolate reductase. The other compds. tested were likewise weak and nonselective.

ST Pneumocystis carinii Toxoplasma gondii bicyclic pyrimidinediamine; methanoquinazolinediamine pyrimidinediamine prepn dihydrofolate reductase inhibitor; ethanoquinazolinediamine pyrimidinediamine prepn dihydrofolate reductase inhibitor; antifolate bicyclic pyrimidinediamine prepn; folate reductase inhibitor bicyclic pyrimidinediamine

IT Pneumocystis carinii
Structure-activity relationship
Toxoplasma gondii
(preparation and antifolate activity of fused bicyclic pyrimidinediamine derivs.)

IT 9002-03-3, Dihydrofolate reductase
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(inhibitors; preparation and antifolate activity of fused bicyclic pyrimidinediamine derivs.)

IT 33987-14-3P **95140-64-0P**, 5H-Indeno[1,2-d]pyrimidine-2,4-diamine 243663-93-6P 243663-94-7P 243663-95-8P 243663-96-9P 243663-97-0P 243663-98-1P
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)
(preparation and antifolate activity of fused bicyclic pyrimidinediamine derivs.)

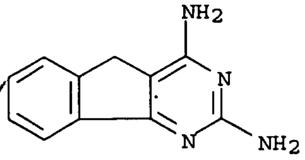
IT 83-33-0, 2,3-Dihydro-1H-inden-1-one 461-58-5, Cyanoguanidine 488-10-8, cis-Jasmone 497-38-1, Norcamphor 770-15-0, Bicyclo[3.3.1]nonane-3,7-dione 3731-38-2, 3-Quinuclidinone 5019-82-9, Bicyclo[3.2.1]octan-2-one 13414-95-4, 6,7-Dihydrobenzo[b]thiophen-4(5H)-one 38651-65-9, (R)-(+)-Nopinone
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and antifolate activity of fused bicyclic pyrimidinediamine derivs.)

RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD

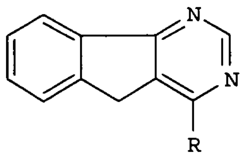
RE

(1) Allegra, C; New Engl J Med 1987, V317, P978 MEDLINE
(2) Broughton, M; Antimicrob Agents Chemother 1991, V35, P1348 HCAPLUS
(3) Chase, B; J Chem Soc 1953, P3518 HCAPLUS
(4) Chio, L; Antinticrob Agents Chemother 1993, V37, P1914 HCAPLUS
(5) Falloon, J; Clin Res 1990, V38, P361A
(6) Fischl, M; J Am Med Assoc 1988, V259, P1185 MEDLINE
(7) Gangjee, A; Curr Pharm Des 1996, V2, P263 HCAPLUS
(8) Gangjee, A; J Heterocyclic Chem 1995, V32, P243
(9) Gangjee, A; J Med Chem 1998, V41, P4533 HCAPLUS
(10) Jacobson, M; J Infect Dis 1994, V169, P384 MEDLINE
(11) Kovacs, J; J Infect Dis 1989, V160, P312 HCAPLUS
(12) Kuyper, L; J Med Chem 1996, V39, P892 HCAPLUS
(13) Leport, C; Am J Med 1988, V84, P94 MEDLINE
(14) Medina, I; N Engl J Med 1990, V323, P776 MEDLINE
(15) Modest, E; J Org Chem 1962, V27, P2708 HCAPLUS
(16) Piper, J; J Med Chem 1996, V39, P1271 HCAPLUS
(17) Queener, S; J Med Chem 1995, V38, P4739 HCAPLUS
(18) Robson; J Med Chem 1997, V40, P3040 HCAPLUS
(19) Rosowsky, A; Antimicrob Agents Chemother 1995, V39, P79 HCAPLUS
(20) Rosowsky, A; J Heterocyclic Chem 1970, V7, P197 HCAPLUS
(21) Rosowsky, A; J Heterocyclic Chem 1971, V8, P789 HCAPLUS
(22) Rosowsky, A; J Heterocyclic Chem 1972, V9, P263 HCAPLUS
(23) Rosowsky, A; J Med Chem 1998, V41, P913 HCAPLUS
(24) Rosowsky, A; J Med Chem 1999, V42, P1007 HCAPLUS
(25) Rosowsky, A; to be published in Drug Design and Discovery
(26) Smolin, E; The Chemistry of Heterocyclic Compounds 1959, P310
(27) Taylor, E; Chemistry and Biology of Pteridines and Folates 1997, P3 HCAPLUS

```
IT    95140-64-0P, 5H-Indeno[1,2-d]pyrimidine-2,4-diamine
      RL: BAC (Biological activity or effector, except adverse); BSU (Biological
      study, unclassified); SPN (Synthetic preparation); BIOL (Biological
      study); PREP (Preparation)
         (preparation and antifolate activity of fused bicyclic pyrimidinediamine
         derivs.)
RN    95140-64-0  HCAPLUS
CN    5H-Indeno[1,2-d]pyrimidine-2,4-diamine (9CI)  (CA INDEX NAME)
```



```
L19   ANSWER 6 OF 20  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN    1997:623340  HCAPLUS
DN    127:331459
ED    Entered STN:  29 Sep 1997
TI    Indeno[1,2-d]pyrimidin-4-amines
AU    Gorlitzer, K.; Herbig, S.; Walter, R. D.
CS    Institut Pharmazeutische Chemie, Technische Universitat Braunschweig,
      Braunschweig, D-38106, Germany
SO    Pharmazie (1997), 52(9), 670-672
      CODEN: PHARAT; ISSN: 0031-7144
PB    Govi-Verlag Pharmazeutischer Verlag
DT    Journal
LA    German
CC    28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
      Section cross-reference(s): 1
OS    CASREACT 127:331459
GI
```



I

```
AB    The 2-amino-3-indenenitrile and -carboxylate react with [CH(NH2)2]+AcO- to
      yield indenopyrimidine I (R = NH2) or 4,5-dihydroindeno[1,2-d]-4(3H)-
      pyrimidinone, resp.  Treatment of the latter with POCl3 furnished
      chloropyrimidine I (R = Cl), which reacts with N-nucleophiles to form the
      title compds. I [R = NHC6H4-3,4-(CH2NEt2)OH, NHC6H4-2-Me,
      NHCHMe(CH2)3NEt2].  Only I [R = NHCHMe(CH2)3NEt2] shows a weak
      antimalarial activity.
ST    indenopyrimidinamine prepn antimalarial
IT    Antimalarials
         (preparation of indenopyrimidinamines with weak antimalarial activity)
IT    197861-26-0P
      RL: BAC (Biological activity or effector, except adverse); BSU (Biological
      study, unclassified); RCT (Reactant); SPN (Synthetic preparation); BIOL
      (Biological study); PREP (Preparation); RACT (Reactant or reagent)
         (preparation of indenopyrimidinamines with weak antimalarial activity)
IT    197861-28-2P 197861-29-3P 197861-30-6P
      RL: BAC (Biological activity or effector, except adverse); BSU (Biological
```

study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)
(preparation of indenopyrimidinamines with weak antimalarial activity)

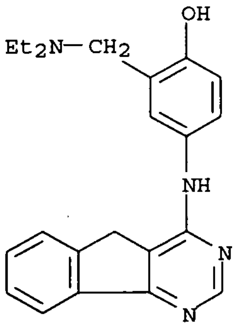
IT 95-53-4, o-Toluidine, reactions 140-80-7 3473-63-0, Formamidine acetate 6297-14-9, 4-Amino-2-diethylaminomethylphenol dihydrochloride 195067-12-0 195067-13-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of indenopyrimidinamines with weak antimalarial activity)

IT 197861-27-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of indenopyrimidinamines with weak antimalarial activity)

IT **197861-25-9P**, 5H-Indeno[1,2-d]pyrimidin-4-amine
197861-31-7P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of indenopyrimidinamines with weak antimalarial activity)

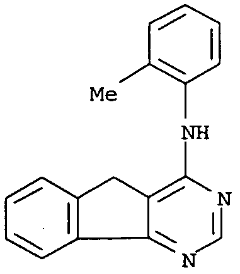
IT **197861-28-2P 197861-29-3P 197861-30-6P**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)
(preparation of indenopyrimidinamines with weak antimalarial activity)

RN 197861-28-2 HCAPLUS
CN Phenol, 2-[(diethylamino)methyl]-4-(5H-indeno[1,2-d]pyrimidin-4-ylamino)-, dihydrochloride (9CI) (CA INDEX NAME)

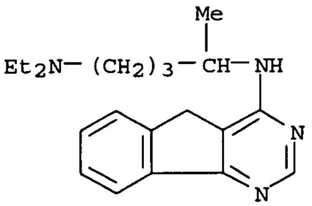


● 2 HCl

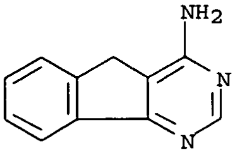
RN 197861-29-3 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-4-amine, N-(2-methylphenyl)- (9CI) (CA INDEX NAME)



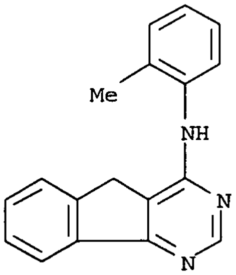
RN 197861-30-6 HCAPLUS
CN 1,4-Pentanediamine, N1,N1-diethyl-N4-5H-indeno[1,2-d]pyrimidin-4-yl- (9CI) (CA INDEX NAME)



```
IT   197861-25-9P, 5H-Indeno[1,2-d]pyrimidin-4-amine
     197861-31-7P
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (preparation of indenopyrimidinamines with weak antimalarial activity)
RN   197861-25-9  HCAPLUS
CN   5H-Indeno[1,2-d]pyrimidin-4-amine (9CI)  (CA INDEX NAME)
```



```
RN   197861-31-7  HCAPLUS
CN   5H-Indeno[1,2-d]pyrimidin-4-amine, N-(2-methylphenyl)-, monohydrochloride
     (9CI)  (CA INDEX NAME)
```



● HCl

```
L19  ANSWER 7 OF 20  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   1996:745516  HCAPLUS
DN   126:13066
ED   Entered STN:  19 Dec 1996
TI   Electrophotographic photoreceptor containing diazafluorenone compound as
     charge-transporting agent
IN   Watanabe, Yukimasa; Akiba, Nobuko; Kawaguchi, Hirobumi; Mizuta, Yasushi
PA   Mita Industrial Co Ltd, Japan
SO   Jpn. Kokai Tokkyo Koho, 8 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
IC   ICM  G03G005-06
CC   74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
```

FAN.CNT 1

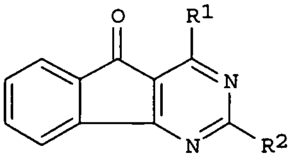
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08240921	A2	19960917	JP 1995-43244	19950302
PRAI	JP 1995-43244		19950302		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 08240921	ICM	G03G005-06

OS MARPAT 126:13066

GI



I

AB The photoreceptor contains diazafluorenone derivative I (R_{1-2} = haloalkyl). The photoreceptor shows high sensitivity.

ST diaza fluorenone charge transporting agent electrophotog; electrophotog photoreceptor diaza fluorenone compd

IT Electrophotographic photoconductors (photoreceptors)
(electrophotog. photoreceptor containing diazafluorenone compound as charge-transporting agent)

IT **39560-81-1P**
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(electrophotog. photoreceptor containing diazafluorenone compound as charge-transporting agent)

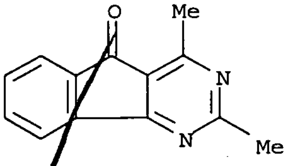
IT 39560-91-3P
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation of diazafluorenone compound)

IT 78-39-7, Triethyl orthoacetate 143-37-3, Ethanimidamide 606-23-5, 1H-Indene-1,3(2H)-dione
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of diazafluorenone compound)

IT **39560-81-1P**
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(electrophotog. photoreceptor containing diazafluorenone compound as charge-transporting agent)

RN 39560-81-1 HCAPLUS

CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2,4-dimethyl- (9CI) (CA INDEX NAME)



L19 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN

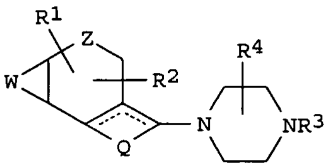
AN 1995:638414 HCAPLUS

DN 123:33070

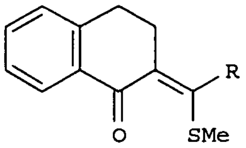
ED Entered STN: 27 Jun 1995

TI Preparation of fused tricyclic heteroaromatic derivatives as dopamine receptor subtype ligands

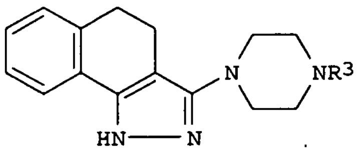
```
IN   Davey, William Barnaby; Leeson, Paul David; Rowley, Michael
PA   Merck Sharp and Dohme Ltd., UK
SO   PCT Int. Appl., 53 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
IC   ICM  C07D231-54
     ICS  C07D261-20; C07D239-70; C07D471-04; C07D495-04; C07D405-12;
          A61K031-42; A61K031-415; A61K031-505
CC   28-9 (Heterocyclic Compounds (More Than One Hetero Atom))
     Section cross-reference(s): 1
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.       DATE
     ---------------     ----   --------    --------------------  --------
PI   WO 9507893           A1    19950323    WO 1994-GB1936        19940906
         W:  AU, CA, JP, US
         RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     CA 2168739           AA    19950323    CA 1994-2168739       19940906
     AU 9475426           A1    19950403    AU 1994-75426         19940906
     AU 681695            B2    19970904
     EP 724572            A1    19960807    EP 1994-925561        19940906
     EP 724572            B1    19981216
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE
     JP 09502449          T2    19970311    JP 1994-509036        19940906
     AT 174591            E     19990115    AT 1994-925561        19940906
     ES 2126773           T3    19990401    ES 1994-925561        19940906
     US 6080745           A     20000627    US 1996-617895        19960312
PRAI GB 1993-19110        A     19930915
     GB 1993-19151        A     19930916
     WO 1994-GB1936       W     19940906
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------   -----  ---------------------------------------------
 WO 9507893      ICM    C07D231-54
                 ICS    C07D261-20; C07D239-70; C07D471-04; C07D495-04;
                        C07D405-12; A61K031-42; A61K031-415; A61K031-505
 WO 9507893      ECLA   C07D231/54; C07D239/70; C07D261/20;
                        C07D471/04+221B+209B; C07D495/04+333A+231A
 US 6080745      NCL    514/210.210; 514/232.800; 514/252.020; 514/252.110;
                        514/252.160; 514/253.010; 514/253.030; 514/254.040;
                        514/254.080; 544/249.000; 544/250.000; 544/368.000;
                        544/371.000
                 ECLA   C07D231/54; C07D239/70; C07D261/20;
                        C07D471/04+221B+209B; C07D495/04+333A+231A
OS   CASREACT 123:33070; MARPAT 123:33070
GI
```



I



II



III

AB Title compds. [I; Q = NNR5, NR5N, NO, ON, NCR6:N; R1,R2,R5 = H, alkyl; 1 of R3,R4 = hydrocarbyl or heterocyclyl and the other = H, hydrocarbyl or heterocyclyl; R6 = alkyl, (di)(alkyl)amino; W = atoms to complete a (hetero)aromatic ring; Z = bond, O, S, CH2, CH2CH2; dashed lines = optional position of addnl. bond] were prepared Thus, α-tetralone was condensed with CS2 and MeI to give methylenetetralone II (R = SMe) which was condensed with 1-(tert-butyloxycarbonyl)piperazine to give II [R = 4-(tert-butyloxycarbonyl)piperazino]. The latter was cyclocondensed with H2NNH2 and the deprotected product N-alkylated with PhCH2CH2Br to give benzoindazole III (R3 = CH2CH2Ph). I had Ki of <1.5μM against spiperone binding at human D4 receptors in vitro.

ST heteroarom tricyclic dopamine receptor ligand

IT Neurotransmitter agonists
(dopaminergic, preparation of fused tricyclic heteroarom. derivs. as dopamine receptor subtype ligands)

IT 164154-24-9P 164154-25-0P 164154-26-1P 164154-27-2P 164154-28-3P
164154-29-4P 164154-30-7P 164154-31-8P 164154-32-9P 164154-33-0P
164154-34-1P 164154-35-2P 164154-37-4P 164154-38-5P 164154-39-6P
164154-40-9P 164154-41-0P 164154-42-1P 164154-43-2P 164154-44-3P
164154-45-4P 164154-46-5P 164154-48-7P 164154-49-8P 164154-51-2P
164154-52-3P 164154-53-4P 164154-55-6P 164154-57-8P
164154-58-9P 164154-59-0P 164154-60-3P 164154-61-4P
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of fused tricyclic heteroarom. derivs. as dopamine receptor subtype ligands)

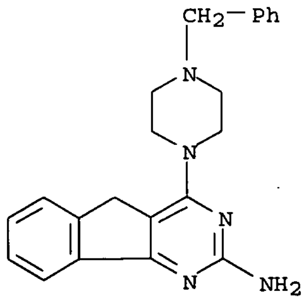
IT 100-39-0, Benzyl bromide 103-63-9, Phenethyl bromide 529-34-0, α-Tetralone 620-02-0, 5-Methylfurfural 5654-92-2 57260-71-6, 1-(tert-Butyloxycarbonyl)piperazine 164154-71-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of fused tricyclic heteroarom. derivs. as dopamine receptor subtype ligands)

IT 57663-21-5P 72360-04-4P 164154-62-5P 164154-63-6P 164154-65-8P
164154-66-9P 164154-67-0P 164154-68-1P 164154-69-2P
164154-70-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of fused tricyclic heteroarom. derivs. as dopamine receptor subtype ligands)

IT **164154-58-9P 164154-59-0P**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of fused tricyclic heteroarom. derivs. as dopamine receptor subtype ligands)

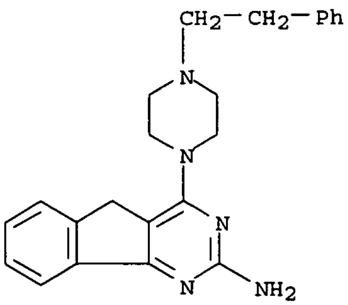
RN 164154-58-9 HCAPLUS

CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-[4-(phenylmethyl)-1-piperazinyl]- (9CI) (CA INDEX NAME)

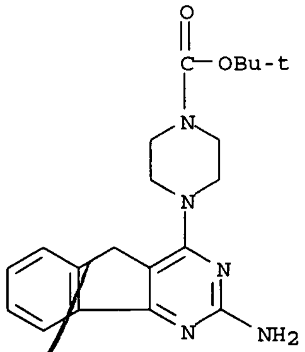


RN 164154-59-0 HCAPLUS

```
CN     5H-Indeno[1,2-d]pyrimidin-2-amine, 4-[4-(2-phenylethyl)-1-piperazinyl]-
       (9CI)  (CA INDEX NAME)
```



```
IT     164154-70-5P
       RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
       (Reactant or reagent)
          (preparation of fused tricyclic heteroarom. derivs. as dopamine receptor
          subtype ligands)
RN     164154-70-5  HCAPLUS
CN     1-Piperazinecarboxylic acid, 4-(2-amino-5H-indeno[1,2-d]pyrimidin-4-yl)-,
       1,1-dimethylethyl ester (9CI)  (CA INDEX NAME)
```

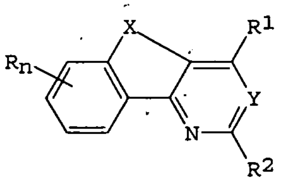


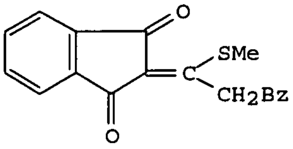
```
L19    ANSWER 9 OF 20  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN     1993:603428  HCAPLUS
DN     119:203428
ED     Entered STN:  13 Nov 1993
TI     Novel heterocyclic derivatives and agrohorticultural fungicides containing
       them
IN     Umeda, Nobuhiro; Saito, Kenji; Hosokawa, Hiroyasu; Hashimoto, Sho
PA     Nippon Soda Co., Ltd., Japan
SO     PCT Int. Appl., 66 pp.
       CODEN: PIXXD2
DT     Patent
LA     Japanese
IC     ICM  C07D221-16
       ICS  C07D239-93; C07D401-04; C07D403-04; C07D409-04; C07D487-04
CC     28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
       Section cross-reference(s): 5
FAN.CNT 1
       PATENT NO.            KIND    DATE        APPLICATION NO.         DATE
       ---------------       ----    --------    --------------------    --------
PI     WO 9308167             A1     19930429    WO 1992-JP1384          19921023
           W:  JP, US
```

RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE
PRAI JP 1991-303771 A 19911024
CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 9308167	ICM	C07D221-16
	ICS	C07D239-93; C07D401-04; C07D403-04; C07D409-04; C07D487-04

OS MARPAT 119:203428
GI


I


II

AB Heterocyclic derivs. I (R = H, alkyl, ~~alkoxy~~, alkylthio, haloalkyl, carbamoyl, etc., n = 1-4; R1 = H, alkylthio, alkylsulfinyl, alkylsulfonyl, etc.; R2 = H, alkoxy, alkyl, Ph, pyridyl, etc.; X = CH2, CHOH, CO, C:CHOH, etc.; Y = N, CH, etc.) and their salts were prepared Stirring 12 g indan II with NH4OAc in AcOH at 100° for 6 h gave 4.5 g I (R = H, R1 = MeS, R2 = Ph, X = CO, Y = CH) (III). III showed fungicidal activity superior to that of triadimefon.

ST indenopyridine prepn fungicide; indenopyrimidine prepn fungicide; heterocyclic compd prepn fungicide

IT Fungicides and Fungistats
(indenopyridines and indenopyrimidines)

IT Heterocyclic compounds
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, as fungicides)

IT 65472-87-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(condensation of, with acetophenone)

IT 98-86-2, Acetophenone, reactions 579-74-8, o-Methoxyacetophenone
RL: RCT (Reactant); RACT (Reactant or reagent)
(condensation of, with bis(methylthio)methyleneindandione)

IT 66129-60-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation of, with benzamidine)

IT 1670-14-0, Benzamidine hydrochloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation of, with benzoylacrylate derivative)

IT 124-42-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation of, with indandione derivative)

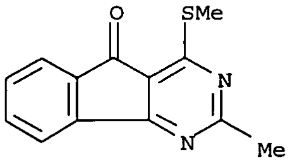
IT 25095-49-2P 91456-10-9P 150366-06-6P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and cyclization of)

IT 150366-08-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and cyclocondensation of, with acetoamidine)

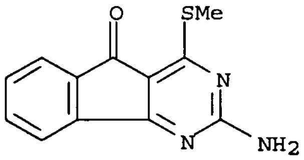
IT 77995-07-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and hydrolysis of)

IT 150528-54-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

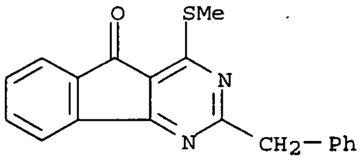
```
          (preparation and reaction of, with bis(methylthio)methyleneindan)
IT     150366-07-7P
       RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
       (Reactant or reagent)
          (preparation and reaction of, with carbon disulfide and Me iodide)
IT     150366-09-9P
       RL: SPN (Synthetic preparation); PREP (Preparation)
          (preparation of)
IT     70760-88-2P 70760-89-3P 70760-90-6P   150365-11-0P
       150365-12-1P   150365-13-2P   150365-14-3P   150365-15-4P   150365-16-5P
       150365-17-6P   150365-18-7P   150365-19-8P   150365-20-1P   150365-21-2P
       150365-22-3P   150365-23-4P   150365-24-5P   150365-25-6P   150365-26-7P
       150365-27-8P   150365-28-9P   150365-29-0P   150365-30-3P   150365-31-4P
       150365-32-5P   150365-33-6P   150365-34-7P   150365-35-8P   150365-36-9P
       150365-37-0P   150365-38-1P   150365-39-2P   150365-40-5P
       150365-41-6P 150365-42-7P 150365-43-8P
       150365-44-9P   150365-45-0P   150365-46-1P   150365-47-2P   150365-48-3P
       150365-49-4P 150365-50-7P 150365-51-8P
       150365-52-9P   150365-53-0P   150365-54-1P   150365-55-2P
       150365-56-3P 150365-57-4P 150365-58-5P
       150365-59-6P   150365-60-9P   150365-61-0P 150365-62-1P
       150365-63-2P 150365-64-3P 150365-65-4P
       150365-66-5P   150365-67-6P   150365-68-7P   150365-69-8P
       150365-70-1P   150365-71-2P   150365-72-3P   150365-73-4P   150365-74-5P
       150365-75-6P   150365-76-7P   150365-77-8P   150365-78-9P   150365-79-0P
       150365-80-3P 150365-81-4P 150365-82-5P
       150365-83-6P   150365-84-7P   150365-85-8P   150365-86-9P
       150365-87-0P 150365-88-1P   150365-89-2P   150365-90-5P
       150365-91-6P   150365-92-7P   150365-93-8P   150365-94-9P
       150365-95-0P 150365-96-1P   150365-97-2P   150365-98-3P
       150365-99-4P   150366-00-0P   150366-01-1P   150366-02-2P   150366-03-3P
       150366-04-4P   150366-05-5P   150528-52-2P   150528-53-3P
       RL: BAC (Biological activity or effector, except adverse); BSU (Biological
       study, unclassified); SPN (Synthetic preparation); BIOL (Biological
       study); PREP (Preparation)
          (preparation of, as fungicide)
IT     58230-85-6
       RL: RCT (Reactant); RACT (Reactant or reagent)
          (reaction of, with acetoacetate)
IT     110-91-8, Morpholine, reactions
       RL: RCT (Reactant); RACT (Reactant or reagent)
          (reaction of, with amidine derivative)
IT     6345-27-3
       RL: RCT (Reactant); RACT (Reactant or reagent)
          (reaction of, with bis(methylthio)methyleneindan)
IT     1122-54-9
       RL: RCT (Reactant); RACT (Reactant or reagent)
          (reaction of, with bis(methylthio)methyleneindandione)
IT     38184-47-3
       RL: RCT (Reactant); RACT (Reactant or reagent)
          (reaction of, with morpholine)
IT     70760-89-3P 70760-90-6P 150365-41-6P
       150365-42-7P 150365-43-8P 150365-49-4P
       150365-50-7P 150365-51-8P 150365-56-3P
       150365-57-4P 150365-58-5P 150365-59-6P
       150365-62-1P 150365-63-2P 150365-64-3P
       150365-65-4P 150365-66-5P 150365-80-3P
       150365-81-4P 150365-82-5P 150365-87-0P
       150365-88-1P 150365-95-0P 150365-96-1P
       RL: BAC (Biological activity or effector, except adverse); BSU (Biological
       study, unclassified); SPN (Synthetic preparation); BIOL (Biological
       study); PREP (Preparation)
          (preparation of, as fungicide)
RN     70760-89-3  HCAPLUS
CN     5H-Indeno[1,2-d]pyrimidin-5-one, 2-methyl-4-(methylthio)- (9CI)  (CA INDEX
       NAME)
```



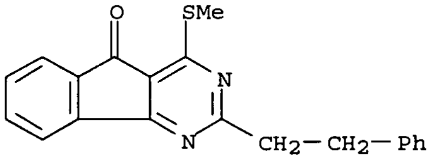
RN 70760-90-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-amino-4-(methylthio)- (9CI) (CA INDEX NAME)



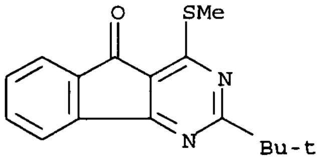
RN 150365-41-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-(methylthio)-2-(phenylmethyl)- (9CI) (CA INDEX NAME)



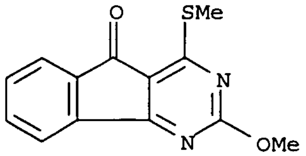
RN 150365-42-7 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-(methylthio)-2-(2-phenylethyl)- (9CI) (CA INDEX NAME)



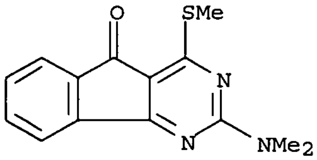
RN 150365-43-8 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-(1,1-dimethylethyl)-4-(methylthio)- (9CI) (CA INDEX NAME)



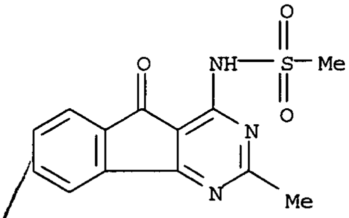
RN 150365-49-4 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-methoxy-4-(methylthio)- (9CI) (CA INDEX NAME)



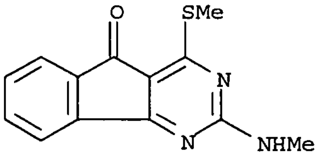
RN 150365-50-7 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-(dimethylamino)-4-(methylthio)- (9CI)
(CA INDEX NAME)



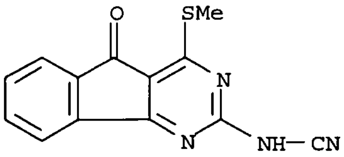
RN 150365-51-8 HCAPLUS
CN Methanesulfonamide, N-(2-methyl-5-oxo-5H-indeno[1,2-d]pyrimidin-4-yl)-
(9CI) (CA INDEX NAME)



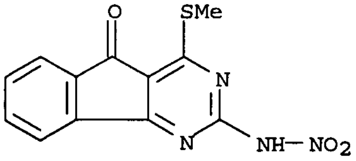
RN 150365-56-3 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-(methylamino)-4-(methylthio)- (9CI)
(CA INDEX NAME)



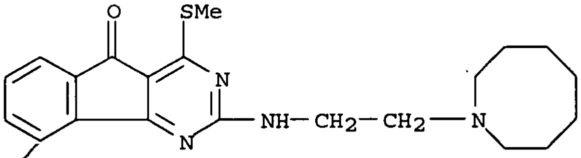
RN 150365-57-4 HCAPLUS
CN Cyanamide, [4-(methylthio)-5-oxo-5H-indeno[1,2-d]pyrimidin-2-yl]- (9CI)
(CA INDEX NAME)



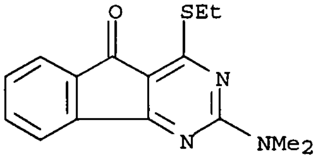
RN 150365-58-5 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-(methylthio)-2-(nitroamino)- (9CI) (CA
INDEX NAME)



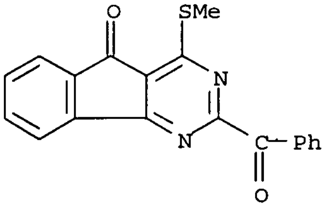
RN 150365-59-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-[[2-(hexahydro-1(2H)-azocinyl)ethyl]amino]-4-(methylthio)- (9CI) (CA INDEX NAME)



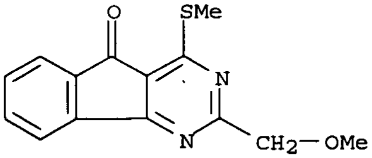
RN 150365-62-1 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-(dimethylamino)-4-(ethylthio)- (9CI) (CA INDEX NAME)



RN 150365-63-2 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-benzoyl-4-(methylthio)- (9CI) (CA INDEX NAME)

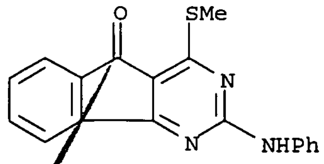


RN 150365-64-3 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-(methoxymethyl)-4-(methylthio)- (9CI) (CA INDEX NAME)

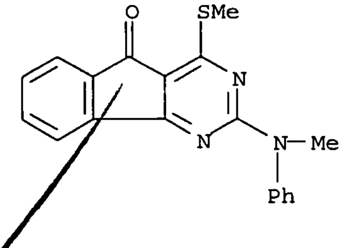


RN 150365-65-4 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-(methylthio)-2-(phenylamino)- (9CI)

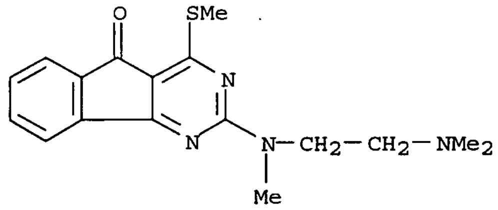
(CA INDEX NAME)



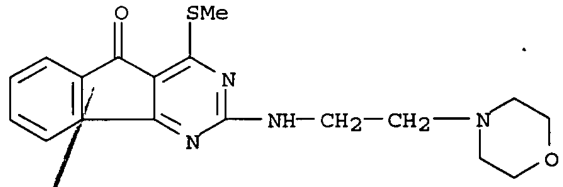
RN 150365-66-5 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-(methylphenylamino)-4-(methylthio)-
(9CI) (CA INDEX NAME)



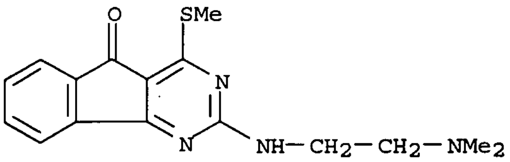
RN 150365-80-3 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-[[2-(dimethylamino)ethyl]methylamino]-4-
(methylthio)- (9CI) (CA INDEX NAME)



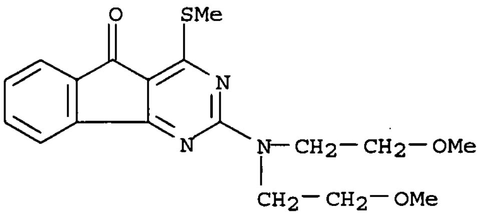
RN 150365-81-4 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-(methylthio)-2-[[2-(4-
morpholinyl)ethyl]amino]- (9CI) (CA INDEX NAME)



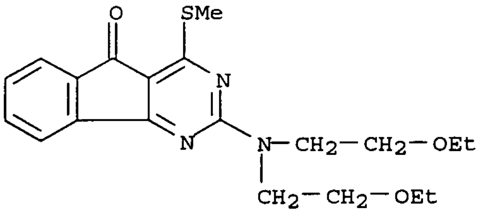
RN 150365-82-5 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-[[2-(dimethylamino)ethyl]amino]-4-
(methylthio)- (9CI) (CA INDEX NAME)



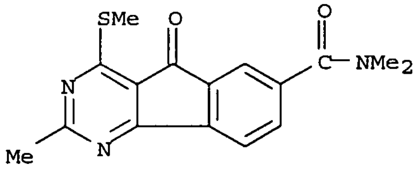
RN 150365-87-0 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-[bis(2-methoxyethyl)amino]-4-(methylthio)- (9CI) (CA INDEX NAME)



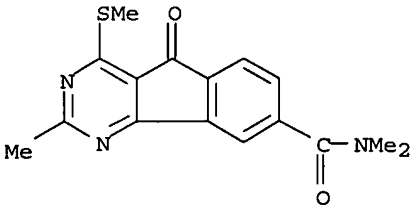
RN 150365-88-1 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-[bis(2-ethoxyethyl)amino]-4-(methylthio)- (9CI) (CA INDEX NAME)



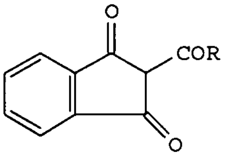
RN 150365-95-0 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-7-carboxamide, N,N,2-trimethyl-4-(methylthio)-5-oxo- (9CI) (CA INDEX NAME)



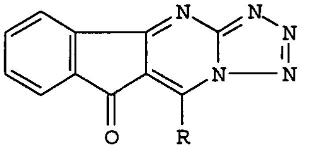
RN 150365-96-1 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidine-8-carboxamide, N,N,2-trimethyl-4-(methylthio)-5-oxo- (9CI) (CA INDEX NAME)



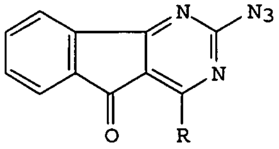
L19 ANSWER 10 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1990:631281 HCAPLUS
DN 113:231281
ED Entered STN: 22 Dec 1990
TI Fused tetrazolo[1,5-a]pyrimidines and 2-azidopyrimidines from 2-acyl-1,3-indandiones and 5-aminotetrazole
AU Russ, Thomas; Bats, Jan W.; Ried, Walter
CS Inst. Org. Chem., Univ. Frankfurt/Main, Frankfurt/Main, D-6000/70, Germany
SO Synthesis (1990), (8), 721-3
CODEN: SYNTBF; ISSN: 0039-7881
DT Journal
LA English
CC 28-10 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 75
OS CASREACT 113:231281
GI



I



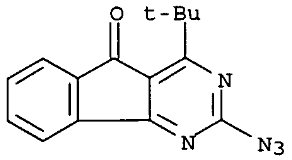
II



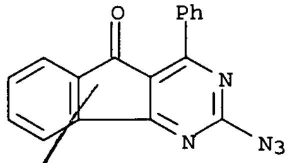
III

AB Cyclocondensation of 2-acyl-1,3-indandiones I (R = Me, Et, CH2CHMe2, CMe3, Ph) and 5-aminotetrazole in ethanol in the presence of catalytic amts. of acetic acid afford indenotetrazolopyrimidinones II (R = Me, Et, CH2CHMe2) or 2-azidoindenopyrimidineones III (R = CMe3, Ph) in a single step depending on the nature of the acyl substituent R. The structure of II (R = CH2CHMe2) was confirmed by x-ray crystal structure anal.
ST indenotetrazolopyrimidine prepn crystal structure; acylindandione aminotetrazole cyclocondensation; indandione acyl aminotetrazole cyclocondensation; azidoindenopyrimidinone; indenopyrimidinone azido; tetrazolopyrimidine indeno prepn crystal structure
IT Cyclocondensation reaction
(of acylindandiones with aminotetrazole)
IT Crystal structure
Molecular structure
(of indenotetrazolopyrimidine derivs.)
IT 4418-61-5, 1H-Tetrazol-5-amine
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation of, with acylindandiones)
IT 83-26-1 1785-95-1
RL: RCT (Reactant); RACT (Reactant or reagent)

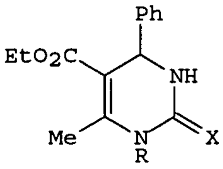
(cyclocondensation of, with aminotetrazole, azidoindenopyrimidine from)
IT 83-28-3 1133-72-8 2740-25-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation of, with aminotetrazole, indenotetrazolopyrimidine derivative from)
IT 130749-14-3P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation and crystal structure of)
IT 130749-12-1P 130749-13-2P **130749-15-4P 130749-16-5P**
130749-17-6P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
IT 59117-83-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with aminotetrazole)
IT **130749-15-4P 130749-16-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 130749-15-4 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-azido-4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

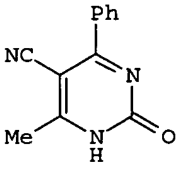


RN 130749-16-5 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-azido-4-phenyl- (9CI) (CA INDEX NAME)



L19 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1989:574056 HCAPLUS
DN 111:174056
ED Entered STN: 10 Nov 1989
TI Synthesis and reactions of Biginelli-compounds. Part I
AU Kappe, Christian Oliver; Roschger, Peter
CS Inst. Org. Chem., Univ. Graz, Graz, A-8010, Austria
SO Journal of Heterocyclic Chemistry (1989), 26(1), 55-64
CODEN: JHTCAD; ISSN: 0022-152X
DT Journal
LA English
CC 28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 75
OS CASREACT 111:174056
GI


I


II

AB Various reactions of 2-oxo- (or thioxo)-1,2,3,4-tetrahydropyrimidine-5-carboxylic acid derivs. (Biginelli compds.) were investigated. The site of methylation and acetylation on 6-methyl-4-phenyl-2-thioxo-1,2,3,4-tetrahydropyrimidine-5-carboxylic acid Et ester I (R = H, Me; X = O, S) was studied. The synthesis of pyrimido[2,3-b]thiazines and thiazolo[3,2-a]pyrimidines was accomplished by condensation of I with 1,3- and 1,2-dielectrophiles. A Dimroth-like rearrangement yielding 6H-1,3-thiazines is observed when I was treated with DMF and POCl3. The formation of indeno[1,2-d]pyrimidines can be achieved by intramol. Friedel-Crafts acylation of II (R = H, Me; X = S). Finally a route for the preparation of 4,6-disubstituted pyrimidine-5-carbonitriles is presented, starting with Biinelli compound II.

ST Biginelli compd prepn reaction; pyrimidothiazinone deriv crystal mol structure; cyclocondensation bromoalkanecarboxylate thiotetrahydropyrimidinecarboxylate; pyrimidothiazine; thiazolopyrimidine; indenopyrimidine; pyrimidinecarbonitrile

IT Crystal structure
Molecular structure
(of pyrimidothiazinone derivative)

IT Cyclocondensation reaction
(of thioxotetrahydropyrimidinecarboxylate derivative with bromoalkanecarboxylic acids)

IT 539-74-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkylation reaction of, with methylphenylthioxotetrahydropyrimidinecarboxylate)

IT 598-52-7, N-Methylthiourea
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation reaction of, with benzaldehyde and Et acetoacetate)

IT 80-58-0 565-74-2 590-92-1, 3-Bromopropionic acid 598-72-1 2052-01-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation reaction of, with methylphenylthioxotetrahydropyrimidinecarboxylate)

IT 100-52-7, Benzaldehyde, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation reaction of, with methylthiourea and Et acetoacetate)

IT 141-97-9, Ethyl acetoacetate
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation reaction of, with methylthiourea and benzaldehyde)

IT 59607-52-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(dehydration of)

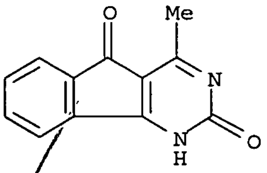
IT 123044-12-2P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and acidolysis of)

IT 123044-18-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and catalytic reduction of)

IT 123044-08-6P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation and crystal structure of)

IT 123044-21-3P 123044-22-4P 193623-16-4P

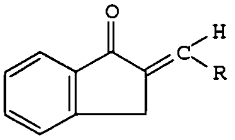
```
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation and dehydrogenation of)
IT   123043-97-0P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation and hydrolysis of)
IT   111535-64-9P   193623-14-2P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation and methylation of)
IT   123044-17-7P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation and reaction of, with phosphorus oxychloride)
IT   74840-45-2P   108958-81-2P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation and reactions of)
IT   123044-09-7P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation and thermolysis of)
IT   82447-97-0P    113697-40-8P   123043-91-4P   123043-93-6P   123043-94-7P
     123043-95-8P   123043-96-9P   123044-00-8P   123044-02-0P   123044-04-2P
     123044-05-3P   123044-06-4P   123044-07-5P   123044-10-0P   123044-11-1P
     123044-13-3P   123044-19-9P 123044-23-5P   123044-24-6P
     123044-25-7P   123044-26-8P   193623-11-9P   193623-12-0P   193623-13-1P
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (preparation of)
IT   5395-36-8   50628-42-7
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (reaction of, with phosphorus oxychloride)
IT   33458-26-3
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (reactions of)
IT   123044-23-5P
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (preparation of)
RN   123044-23-5  HCAPLUS
CN   1H-Indeno[1,2-d]pyrimidine-2,5-dione, 4-methyl- (9CI)  (CA INDEX NAME)
```



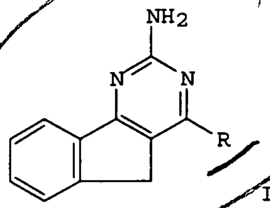
TPl, I4

```
L19  ANSWER 12 OF 20  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   1987:575990  HCAPLUS
DN   107:175990
ED   Entered STN:  14 Nov 1987
TI   Heterocycles.  14.  Synthesis of 5H-indenopyrimidines
AU   El-Rayyes, Nizar; Al-Qatami, Sheekha; Edun, Mustafa
CS   Dep. Chem., Kuwait Univ., Kuwait, Kuwait
SO   Journal of Chemical and Engineering Data (1987), 32(4), 481-3
     CODEN: JCEAAX; ISSN: 0021-9568
DT   Journal
LA   English
CC   28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
OS   CASREACT 107:175990
```

GI



I



II

AB 1-Indanone was treated with aryl aldehydes RCHO [R = (un)substituted Ph, naphthyl, etc.] to give corresponding arylideneindanones I. Condensation of I with HN:C(NH2)2 gave the corresponding aminoarylindenopyrimidines II. The structures of all products were substantiated by chemical and spectroscopic methods.

ST indenopyrimidine aminoaryl; cyclocondensation arylideneindanone guanidine

IT Cyclocondensation reaction
(of arylideneindanones with guanidine, indenopyrimidines from)

IT 83-33-0, 1-Indanone
RL: RCT (Reactant); RACT (Reactant or reagent)
(condensation of, with aryl aldehydes)

IT 66-77-3 66-99-9, 2-Naphthalenecarboxaldehyde 89-98-5, o-Chlorobenzaldehyde 98-01-1, 2-Furancarboxaldehyde, reactions 98-03-3, 2-Thiophenecarboxaldehyde 100-52-7, Benzaldehyde, reactions 104-88-1, p-Chlorobenzaldehyde, reactions 123-11-5, p-Methoxybenzaldehyde, reactions 591-31-1, m-Methoxybenzaldehyde 1122-91-4, p-Bromobenzaldehyde 3132-99-8, m-Bromobenzaldehyde
RL: RCT (Reactant); RACT (Reactant or reagent)
(condensation of, with indanone)

IT 50-01-1, Guanidine hydrochloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation of, with arylideneindanones)

IT **110117-40-3P 110117-42-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and acetylation or reaction with nitrous acid)

IT 5706-12-7P 5706-14-9P 5706-16-1P 5706-17-2P 5706-19-4P 5706-21-8P 6072-51-1P 81975-58-8P 92882-96-7P 92882-97-8P 110117-34-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and cyclocondensation of, with guanidine)

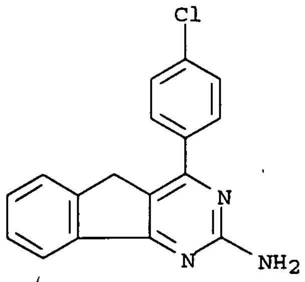
IT **110117-44-7P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction of, with nitrous acid)

IT **110117-35-6P 110117-36-7P 110117-37-8P 110117-38-9P 110117-39-0P 110117-41-4P 110117-43-6P 110117-45-8P 110117-46-9P 110117-47-0P 110117-48-1P 110117-49-2P 110117-50-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

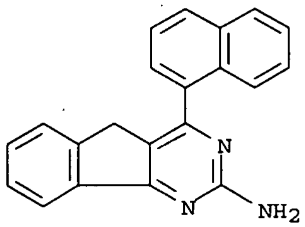
IT **110117-40-3P 110117-42-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and acetylation or reaction with nitrous acid)

RN 110117-40-3 HCAPLUS

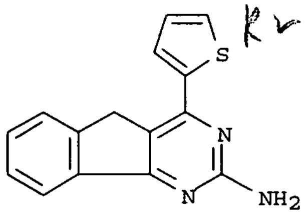
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(4-chlorophenyl)- (9CI) (CA INDEX NAME)



RN 110117-42-5 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(1-naphthalenyl)- (9CI) (CA INDEX NAME)

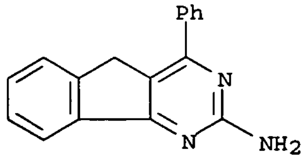


IT 110117-44-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction of, with nitrous acid)
RN 110117-44-7 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(2-thienyl)- (9CI) (CA INDEX NAME)

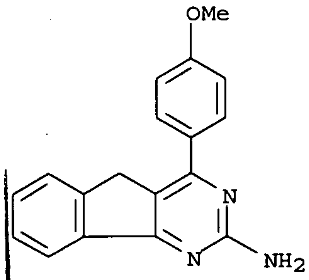


Rv.

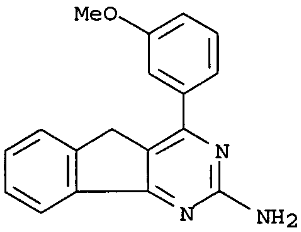
IT 110117-35-6P 110117-36-7P 110117-37-8P
110117-38-9P 110117-39-0P 110117-41-4P
110117-43-6P 110117-45-8P 110117-46-9P
110117-47-0P 110117-48-1P 110117-49-2P
110117-50-5P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 110117-35-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-phenyl- (9CI) (CA INDEX NAME)



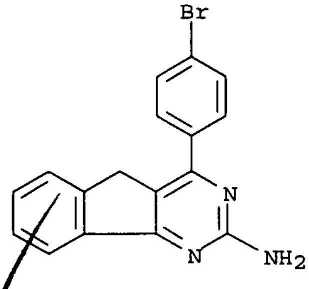
RN 110117-36-7 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



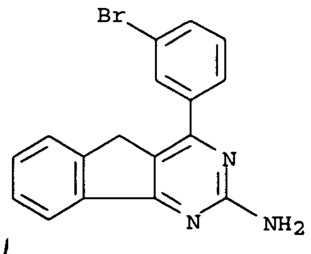
RN 110117-37-8 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(3-methoxyphenyl)- (9CI) (CA INDEX NAME)



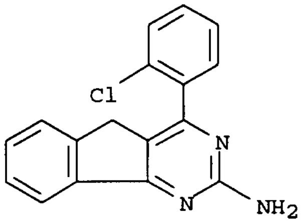
RN 110117-38-9 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(4-bromophenyl)- (9CI) (CA INDEX NAME)



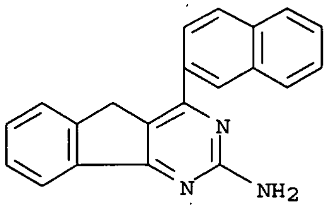
RN 110117-39-0 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(3-bromophenyl)- (9CI) (CA INDEX NAME)



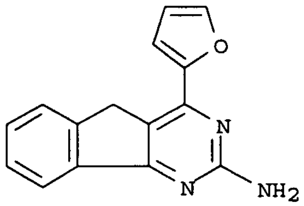
✓ RN 110117-41-4 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(2-chlorophenyl)- (9CI) (CA INDEX NAME)



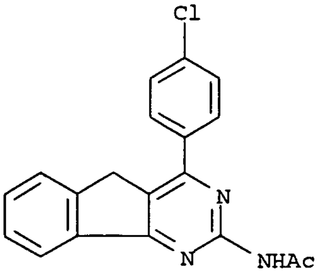
✓ RN 110117-43-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(2-naphthalenyl)- (9CI) (CA INDEX NAME)



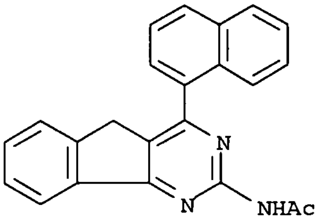
RN 110117-45-8 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-2-amine, 4-(2-furanyl)- (9CI) (CA INDEX NAME)



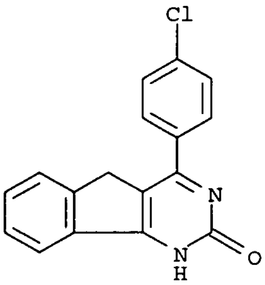
RN 110117-46-9 HCAPLUS
CN Acetamide, N-[4-(4-chlorophenyl)-5H-indeno[1,2-d]pyrimidin-2-yl]- (9CI) (CA INDEX NAME)



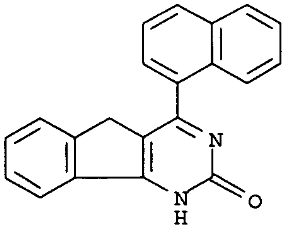
RN 110117-47-0 HCAPLUS
CN Acetamide, N-[4-(1-naphthalenyl)-5H-indeno[1,2-d]pyrimidin-2-yl]- (9CI)
(CA INDEX NAME)



RN 110117-48-1 HCAPLUS
CN 2H-Indeno[1,2-d]pyrimidin-2-one, 4-(4-chlorophenyl)-1,5-dihydro- (9CI)
(CA INDEX NAME)

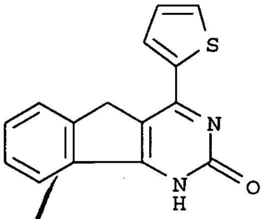


RN 110117-49-2 HCAPLUS
CN 2H-Indeno[1,2-d]pyrimidin-2-one, 1,5-dihydro-4-(1-naphthalenyl)- (9CI)
(CA INDEX NAME)

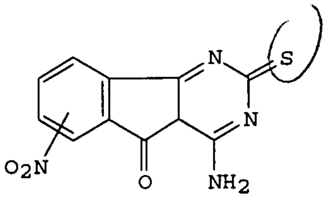


RN 110117-50-5 HCAPLUS
CN 2H-Indeno[1,2-d]pyrimidin-2-one, 1,5-dihydro-4-(2-thienyl)- (9CI) (CA

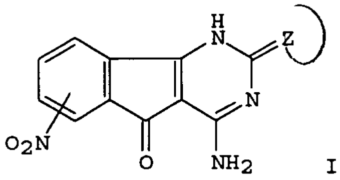
INDEX NAME)



L19 ANSWER 13 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1987:477748 HCAPLUS
DN 107:77748
ED Entered STN: 05 Sep 1987
TI Synthesis of new 2,4a-dihydro-4-amino-2-thioxo-5H-indeno[1,2-d]pyrimidin-5-one derivatives
AU Kandeel, Ezzat M.; El Morsy, Saad S.; Zimaity, Mohamed T.; Yousif, Mohamed M.
CS Fac. Sci., Mansoura Univ., Mansoura, Egypt
SO Pakistan Journal of Scientific and Industrial Research (1986), 29(6), 424-6
CODEN: PSIRAA; ISSN: 0030-9885
DT Journal
LA English
CC 28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
GI



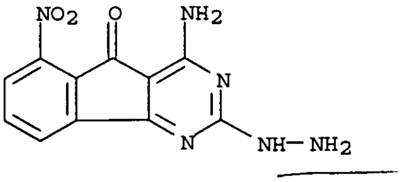
I



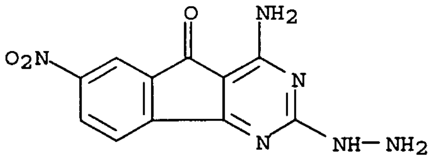
II

AB 2-Cyano-1,3-indandiones underwent cycloaddn.-cyclocondensation reactions with thiourea to yield title compds. I. The latter were converted to II (Z = O, NNH2).
ST cycloaddn cyclocondensation cyanoindandione thiourea; indenopyrimidinonethione amino dihydro
IT Cyclocondensation reaction
(cycloaddn. and, of cyanoindandiones with thiourea)
IT Cycloaddition reaction
(cyclocondensation and, of cyanoindanediones with thiourea)
IT 302-01-2, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(condensation reaction of, with indenopyrimidinethiones)
IT 62-56-6, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(cycloaddn.-cyclocondensation of, with cyanoindandiones)
IT 2050-19-3, Diethyl 4-nitrophthalate 62351-79-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation reaction of, with acetonitrile)
IT 75-05-8, Acetonitrile, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclocondensation reaction of, with nitrophthalate esters)
IT 109672-97-1P 109672-98-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

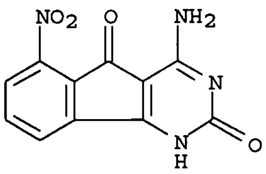
(preparation and cycloaddn.-cyclocondensation of, with thiourea)
IT 109672-99-3P 109673-00-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(preparation and reactions of)
IT **109673-01-0P 109673-02-1P 109673-03-2P**
109673-04-3P 109673-05-4P 109673-06-5P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
IT **109673-01-0P 109673-02-1P 109673-03-2P**
109673-04-3P 109673-05-4P 109673-06-5P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 109673-01-0 HCAPLUS
CN 1H-Indeno[1,2-d]pyrimidine-2,5-dione, 4-amino-6-nitro-, 2-hydrazone (9CI)
(CA INDEX NAME)



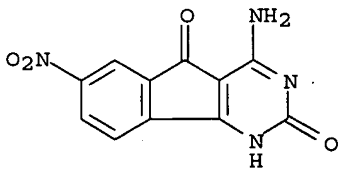
RN 109673-02-1 HCAPLUS
CN 1H-Indeno[1,2-d]pyrimidine-2,5-dione, 4-amino-7-nitro-, 2-hydrazone (9CI)
(CA INDEX NAME)



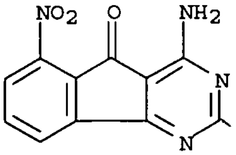
RN 109673-03-2 HCAPLUS
CN 1H-Indeno[1,2-d]pyrimidine-2,5-dione, 4-amino-6-nitro- (9CI) (CA INDEX
NAME)



RN 109673-04-3 HCAPLUS
CN 1H-Indeno[1,2-d]pyrimidine-2,5-dione, 4-amino-7-nitro- (9CI) (CA INDEX
NAME)



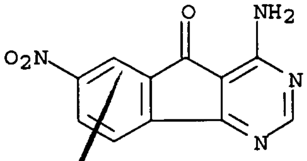
RN 109673-05-4 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-amino-6-nitro- (9CI) (CA INDEX NAME)



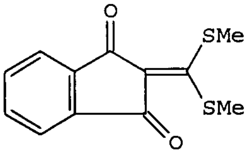
R2

H

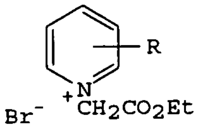
RN 109673-06-5 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-amino-7-nitro- (9CI) (CA INDEX NAME)



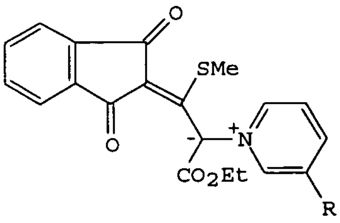
L15 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1985:6390 HCAPLUS
DN 102:6390
ED Entered STN: 12 Jan 1985
TI Reaction of 2-[bis(methylthio)methylene]indan-1,3-dione with N-ylides and S-ylides
AU Tominaga, Yoshinori; Norisue, Hajime; Matsuda, Yoshiro; Kobayashi, Goro
CS Fac. Pharm. Sci., Nagasaki Univ., Nagasaki, 852, Japan
SO Chemical & Pharmaceutical Bulletin (1984), 32(8), 2910-14
CODEN: CPBTAL; ISSN: 0009-2363
DT Journal
LA English
CC 28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
OS CASREACT 102:6390
GI



I



II



III

AB The reaction of the title compound (I) with pyridinium N-ylides II (R = H, 3-Me, 2-Me, 2-NH2) gave the corresponding stable pyridinium N-allylides

III (R = H, Me), 2-(2-indanyl)indolizine, and 3-(2-indanylidenyl)methylimidazo[1,2-a]pyridine in good yields. A fused thiabenzene oxide, 2-methyl-4-methylthio-5-oxo-5H-indeno[1,2-c]thiapyran 2-oxide, was synthesized by the reaction of I with trimethylsulfoxonium iodide under similar conditions. An azathiabenzene oxide, 2-methyl-4-methylthio-5-oxo-5H-indeno[2,1-d][1,2]thiazine 2-oxide was also synthesized from 2-(1-dimethylsulfoximino-1-methylthio)methyleneindan-1,3-dione, which was prepared from I and sulfoximine.

ST methylthiomethyleneindandione reaction ylide nitrogen sulfur; imidazopyridine indanylidenemethyl; indolizine indanyl; indenothiapyran oxide; indenothiazine oxide

IT Ylides
RL: RCT (Reactant); RACT (Reactant or reagent)
(nitrogen, reaction of, with bis(methylthio)methyleneindandione)

IT Ylides
RL: RCT (Reactant); RACT (Reactant or reagent)
(sulfur, reaction of, with bis(methylthio)methyleneindandione)

IT 93700-23-3P 93700-24-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and cyclization of)

IT 93748-04-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction of, with benzylamine)

IT 93700-18-6P 93700-19-7P 93700-20-0P 93700-21-1P 93700-22-2P 93700-25-5P **93700-26-6P** 93700-27-7P 93700-28-8P **93700-29-9P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

IT 124-42-5 124-46-9 538-28-3 14527-26-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with (dimethylsulfoxamino)methyleneindandione)

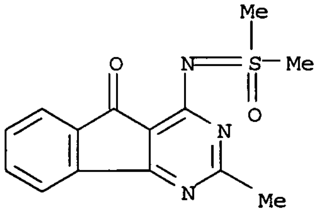
IT 1520-31-6 1774-47-6 17282-40-5 55814-02-3 64636-79-9 93700-17-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with bis(methylthio)methyleneindandione)

IT 100-46-9, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with methylthioindenothiazine oxide)

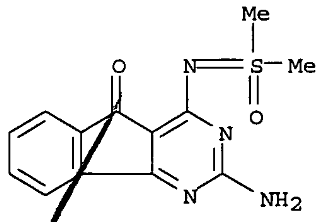
IT 65472-87-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with nitrogen and sulfur ylides)

IT **93700-26-6P 93700-29-9P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

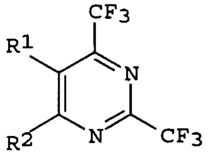
RN 93700-26-6 HCAPLUS
CN Sulfoximine, S,S-dimethyl-N-(2-methyl-5-oxo-5H-indeno[1,2-d]pyrimidin-4-yl)- (9CI) (CA INDEX NAME)



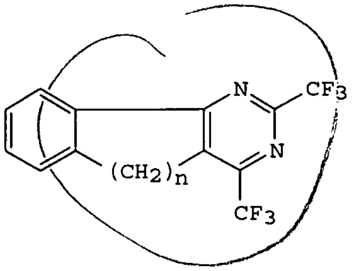
RN 93700-29-9 HCAPLUS
CN Sulfoximine, N-(2-amino-5-oxo-5H-indeno[1,2-d]pyrimidin-4-yl)-S,S-dimethyl- (9CI) (CA INDEX NAME)



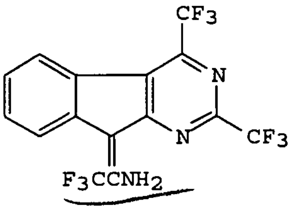
L19 ANSWER 15 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1984:490866 HCAPLUS
DN 101:90866
ED Entered STN: 15 Sep 1984
TI Trifluoromethyl-substituted pyrimidines from enamines and trifluoroacetonitrile
AU Burger, Klaus; Wassmuth, Ulrike; Hein, Friedrich; Rottegger, Silvia
CS Inst. Org. Chem., Tech. Univ. Muenchen, Garching, D-8046, Fed. Rep. Ger.
SO Liebigs Annalen der Chemie (1984), (5), 991-1002
CODEN: LACHDL; ISSN: 0170-2041
DT Journal
LA German
CC 28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 22
OS CASREACT 101:90866
GI



I



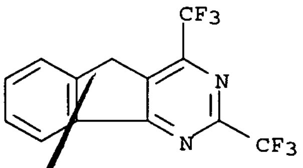
II



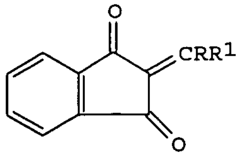
III

AB Cyclization of enamines R1CH:CR2NR3R4 [R1 = Ph, H, CO2Et, R2 = Me3C, Me, R1R2 = (CH2)n, n = 3,4,6,10, CH2NMeCH2CH2, R3 = R4 = Me, Et, NR3R4 = morpholino, piperidino, pyrrolidino] by F3CCN gave 52-81% I. Analogously obtained from cyclic enamines were II (n = 1,2) and III. A mechanism for these reactions is discussed.
ST pyrimidine bistrifluoromethyl; enamine cyclization trifluoroacetonitrile
IT Ring closure and formation
(of enamines by trifluoroacetonitrile)
IT Cycloaddition reaction
(of trifluoroacetonitrile with enamines)
IT Enamines
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with trifluoroacetonitrile, bis(trifluoromethyl)pyrimidines from)
IT 353-85-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclization by, of enamines, bis(trifluoromethyl)pyrimidines from)
IT 627-70-3

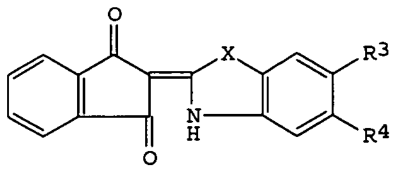
```
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (cyclization of, by trifluoroacetonitrile)
IT   670-80-4   936-52-7   942-81-4   7694-51-1   10448-42-7   25769-05-5
     42833-31-8
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (cyclization of, by trifluoroacetonitrile,
        bis(trifluoromethyl)pyrimidine derivative from)
IT   1737-70-8P   80489-11-8P   91474-27-0P
     RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
        (preparation and NMR of)
IT   80489-04-9P   80489-05-0P   80489-06-1P   80489-07-2P   91474-20-3P
     91474-21-4P   91474-22-5P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation and bromination of)
IT   80489-09-4P   80489-10-7P
     RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
     (Reactant or reagent)
        (preparation and dehydrobromination of)
IT   80489-02-7P   80489-03-8P   91474-18-9P   91474-19-0P
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (preparation of)
IT   118-12-7   2403-57-8   4231-35-0   14205-42-6   23929-00-2   28003-01-2
     63913-40-6   80489-08-3   91474-23-6 91474-24-7   91474-25-8
     91474-26-9
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (reaction of, with trifluoroacetonitrile)
IT   91474-24-7
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (reaction of, with trifluoroacetonitrile)
RN   91474-24-7  HCAPLUS
CN   5H-Indeno[1,2-d]pyrimidine, 2,4-bis(trifluoromethyl)- (9CI)  (CA INDEX
     NAME)
```



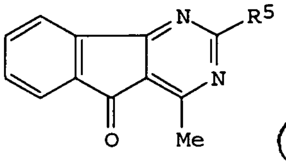
```
L19  ANSWER 16 OF 20  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   1979:456670  HCAPLUS
DN   91:56670
ED   Entered STN:  12 May 1984
TI   Synthesis and reactions of 2-[bis(alkylthio)methylidene]indan-1,3-diones
AU   Augustin, M.; Groth, C.; Kristen, H.; Peseke, K.; Wiechmann, C.
CS   Sekt. Chem., Martin-Luther-Univ. Halle-Wittenberg, Halle/Saale, DDR-402,
     Ger. Dem. Rep.
SO   Journal fuer Praktische Chemie (Leipzig) (1979), 321(2), 205-14
     CODEN: JPCEAO; ISSN: 0021-8383
DT   Journal
LA   German
CC   26-2 (Condensed Aromatic Compounds)
     Section cross-reference(s): 28
OS   CASREACT 91:56670
GI
```



I



III



IV

103(5)

AB The title compds., e.g., I (R = R1 = MeS; II) prepared by the reaction of indandione with CS2, base, and Me2SO4, reacted with nucleophiles by substitution of the MeS group. II reacted with amines to give I (R = SMe, R1 = R2NH) and I (R = R1 = R2NH; R2 = Ph, p-tolyl, etc.); reaction with diamines, amino alcs., or amino mercaptans gave III (X = O, S, NH; R3 = H, MeO, NO2; R4 = H, MeO). II reacted with R5C(NH):NH (R5 = Me, NH2, SMe) to give IV, where the CO group was integrated in the cyclization. Carbanions also caused substitution on II.

ST indandione alkylthiomethylidene; substitution alkylmethylideneindandione nucleophilic

IT Substitution reaction, nucleophilic
(of bis(methylthio)methyleneindandione)

IT 65472-87-9P 70760-61-1P 70760-62-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and nucleophilic substitution reactions of)

IT 62576-05-0P 63786-62-9P 63786-71-0P 70760-63-3P 70760-64-4P
70760-65-5P 70760-66-6P 70760-67-7P 70760-68-8P 70760-69-9P
70760-70-2P 70760-71-3P 70760-72-4P 70760-73-5P 70760-74-6P
70760-75-7P 70760-76-8P 70760-77-9P 70760-78-0P 70760-79-1P
70760-80-4P 70760-81-5P 70760-82-6P 70760-83-7P 70760-84-8P
70760-85-9P 70760-86-0P 70760-87-1P 70760-88-2P **70760-89-3P**
70760-90-6P 70760-91-7P 70760-92-8P 70760-93-9P
70760-94-0P 70760-95-1P 70760-96-2P 70760-97-3P 70760-98-4P
70760-99-5P 70761-00-1P 70761-01-2P 70787-87-0P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

IT 74-88-4, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with Ph isothiocyanate and indandione)

IT 143-33-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with bis(methylthio)methyleneindandione)

IT 100-52-7, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with dianilinomethyleneindandione)

IT 541-41-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with dimercaptomethyleneindandione salt)

IT 103-71-9, reactions 103-72-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with indandione)

IT 606-23-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactions of, with carbon disulfide and alkyl halides)

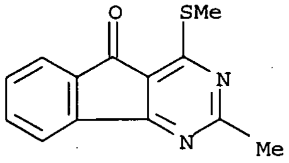
IT 75-15-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactions of, with indandione and alkyl halides)

IT 77-78-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactions of, with indandione and carbon disulfide)

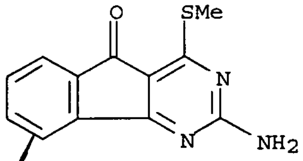
IT 60-23-1 62-53-3, reactions 75-04-7, reactions 90-04-0 95-51-2
95-53-4, reactions 95-54-5, reactions 95-55-6 99-09-2 100-46-9,
reactions 104-94-9 106-47-8, reactions 106-49-0, reactions
107-15-3, reactions 108-42-9 108-44-1, reactions 113-00-8 137-07-5
143-37-3 479-27-6 603-85-0 2260-00-6 67394-73-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(substitution reaction of, with bis(methylthio)methyleneindandione)

IT **70760-89-3P 70760-90-6P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 70760-89-3 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-methyl-4-(methylthio)- (9CI) (CA INDEX NAME)



RN 70760-90-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-amino-4-(methylthio)- (9CI) (CA INDEX NAME)



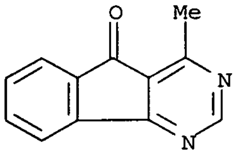
✓ L19 ANSWER 17 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1973:29706 HCAPLUS
DN 78:29706
ED Entered STN: 12 May 1984
TI 5H-indeno[1,2-d]pyrimidin-5-ones
AU Demerac, S.; Dalton, L. K.; Elmes, B. C.
CS Div. Appl. Chem., CSIRO, Melbourne, Australia
SO Australian Journal of Chemistry (1972), 25(12), 2651-7
CODEN: AJCHAS; ISSN: 0004-9425
DT Journal
LA English
CC 28-17 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 27
GI For diagram(s), see printed CA Issue.

OP/\ A9

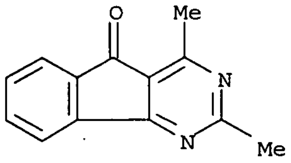
AB 2-(1-Ethoxyethylidene)indandione and formamidine RC(NH2):NH (R = H) react to give 4-methyl-5H-indeno[1,2-d]-pyrimidin-5-one (I; R = H). Similarly 2-methyl-, 2-trichloromethyl-, 2-trifluoromethyl-, 2-amino-, 2-methylthio-4-methyl-5H-indeno[1,2-d]pyrimidin-5-one were prepared using the resp. amidines, guanidine, or methylisothiourea. Urea and thiourea failed to react and gave instead mol. addition compds. 2-Hydroxymethyleneindan-1-one with urea or thiourea reacts to give the 2-(ureidomethylene)- or 2-(thioureidomethylene)indan-1-one. All attempts to cyclize these compds. to give pyrimidines failed. The alkaline hydrolysis and bromination of the indenopyrimidines were investigated.

ST indenopyrimidinone; indandione amidine cycloaddn; urea indanone reaction; thiourea indanone reaction

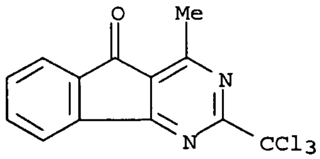
IT Cycloaddition reaction
(of ethoxyethylideneindandione with amidines)
IT 594-14-9 2986-19-8 3473-63-0 36896-17-0 39560-94-6 39560-95-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(cycloaddition of, with (ethoxyethylidene)indandione)
IT 39560-91-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(cycloaddition of, with amidines)
IT 1685-97-8P **39560-78-6P** 39560-79-7P 39560-80-0P
39560-81-1P **39560-82-2P** **39560-83-3P**
39560-84-4P 39560-85-5P **39560-86-6P** **39560-88-8P**
39560-89-9P 39560-90-2P 39606-50-3P 39606-51-4P
39606-52-5P 39606-53-6P 39606-54-7P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
IT 33279-07-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with urea and with thiourea)
IT 57-13-6, reactions 62-56-6, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(with hydroxymethyleneindanone)
IT **39560-78-6P** **39560-81-1P** **39560-82-2P**
39560-83-3P **39560-86-6P** **39560-88-8P**
39560-89-9P **39606-52-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 39560-78-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-methyl- (9CI) (CA INDEX NAME)



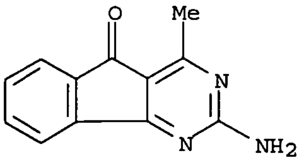
RN 39560-81-1 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2,4-dimethyl- (9CI) (CA INDEX NAME)



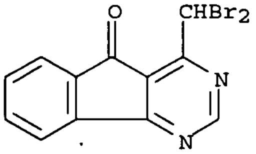
RN 39560-82-2 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-methyl-2-(trichloromethyl)- (9CI) (CA INDEX NAME)



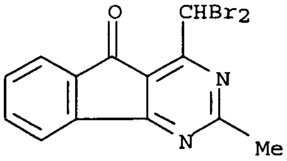
RN 39560-83-3 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2-amino-4-methyl- (9CI) (CA INDEX NAME)



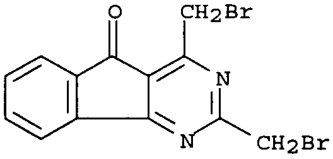
RN 39560-86-6 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-(dibromomethyl)- (9CI) (CA INDEX NAME)



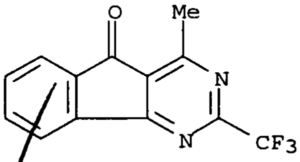
RN 39560-88-8 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-(dibromomethyl)-2-methyl- (9CI) (CA INDEX NAME)



RN 39560-89-9 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 2,4-bis(bromomethyl)- (9CI) (CA INDEX NAME)

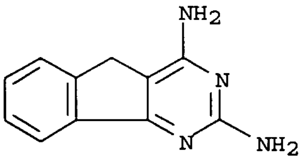


RN 39606-52-5 HCAPLUS
CN 5H-Indeno[1,2-d]pyrimidin-5-one, 4-methyl-2-(trifluoromethyl)- (9CI) (CA INDEX NAME)



L19 ANSWER 18 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1972:419601 HCAPLUS
DN 77:19601
ED Entered STN: 12 May 1984
TI 2,4-Diaminopyrimidines from dicyandiamide. IV. Condensation with

```
     bicyclic aromatic ketones
AU   Sengupta, Sisir K.; Chatterjee, Suprabhat; Protopapa, H. Kangur; Modest,
     Edward J.
CS   Child. Cancer Res. Found., Harvard Med. Sch., Boston, MA, USA
SO   Journal of Organic Chemistry (1972), 37(9), 1323-8
     CODEN: JOCEAH; ISSN: 0022-3263
DT   Journal
LA   English
CC   28-17 (Heterocyclic Compounds (More Than One Hetero Atom))
GI   For diagram(s), see printed CA Issue.
AB   The synthesis of several tricyclic diaminopyrimidine derivs. by
     condensation of dicyandiamide with bicyclic aromatic ketones is reported.
     An interesting skeletal rearrangement was observed when 2,4-
     diaminobenzo[g]quinazoline (I) was isolated as the major product of
     Pd-charcoal dehydrogenation (under disproportionation conditions) of
     1,3-diamino-5,6-dihydrobenzo[f]-quinazoline (II), the 2-tetralone-
     dicyandiamide condensation product.  Representatives of the
     2,4-diaminobenzo[h]quinazoline, the 2,4-diaminothieno[2,3-h]quinazoline,
     and the 2,4-diamino-5H-indeno[1,2-d]pyrimidine ring systems are described.
ST   benzo quinazoline amino; thieno quinazoline; indeno quinazoline;
     pyrimidine indeno
IT   Rearrangement
        (of diaminodihydrobenzo[f]quinazoline)
IT   Cycloaddition reaction
        (of dicyandiamide, with bicyclic aromatic ketones)
IT   461-58-5
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (condensation of, with bicyclic aromatic ketones)
IT   7066-18-4P   13898-60-7P   16061-72-6P   33987-00-7P   33987-01-8P
     33987-02-9P   33987-03-0P   33987-04-1P   33987-05-2P   33987-07-4P
     33987-08-5P   33987-09-6P   33987-10-9P   33987-11-0P   33987-12-1P
     33987-13-2P   33987-14-3P   33987-15-4P 33987-16-5P
     33987-17-6P
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (preparation of)
IT   33987-16-5P
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (preparation of)
RN   33987-16-5  HCAPLUS
CN   5H-Indeno[1,2-d]pyrimidine-2,4-diamine, monohydrochloride (9CI)  (CA INDEX
     NAME)
```



● HCl

```
L19  ANSWER 19 OF 20  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   1962:462757  HCAPLUS
DN   57:62757
OREF 57:12481e-i,12482a
ED   Entered STN:  22 Apr 2001
TI   Pyrimidine derivatives. III. Novel synthesis of 2,4diaminopyrimidines
AU   Modest, Edward J.; Chatterjee, Suprabhat; Kangur, Heljo
CS   Harvard Med. School, Boston, MA
SO   Journal of Organic Chemistry (1962), 27, 2708-9
```

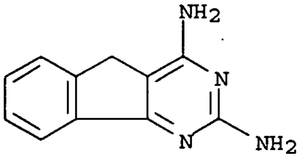
CODEN: JOCEAH; ISSN: 0022-3263
DT Journal
LA Unavailable
CC 32 (Heterocyclic Compounds-More than One Hetero Atom)
AB cf. CA 51, 6857i; 54, 22780c. Reaction of dicyandiamide, RR1NC(:NH)NHCN
(I, R = R1 = H) (II), with cyclohexanone, R2CH2COR3 [III, R2R3 = (CH2)4]
(IV) 3 hrs. at 150-60° according to Applequest (U.S. 2,517,824, CA
44, 10375g) yielded 40% 2,4-diamino-5,6,7,8-tetrahydroquinazoline (V, R =
NH2) (VI), m. 243-4°, λ 275 mμ (ε 7850, pH 1.0),
λ 284 mμ (ε 7620, pH 10.0). [(H2N)2C:NH]2.H2CO3 and
2-carbethoxycyclohexanone gave V (R = OH), chlorinated to give V (R = Cl),
and aminated to yield VI. The reaction with I was extended to cyclic and
acyclic ketones. The mixture was maintained at 155-205° 2-24 hrs.
(usually 3-6 hrs.) and H2O removed as formed. Ketones b. below
155° were autoclaved or treated in a sealed tube. Use of
EtOCH2CH2OCH2CH2OH or quinoline as solvent improved the original
conditions without solvent and the reaction of II with α-tetralone
was assisted by use of a basic catalyst, such as Triton B. II condensed
with 4-methylcyclohexanone, 3-methylcyclohexanone, cyclopentanone,
cycloheptanone, cyclopentadecanone, α-tetralone, β-tetralone,
trans-β-decalone, 1-indanone, and 1-oxo-1,2,3,4-
tetrahydrophenanthrene gave the corresponding 2,4-diaminopyrimidine
condensation products (m.p. and % yield given): 232-4°, 50.2; (VII)
199-203°, 69.2; 231-2°, 8.5; 216-17°, 50.5;
235-6°, 24.7; 209-10°, 54.8; (VIII) 263-4°, 38.0;
(IX) 254-5°, 61.9; 262-4°, 45.1; (X) 311-13°, 34.4.
All structures were established except for VII, VIII, and IX, where
cyclization could occur on either side of the CO group. With
1-oxol,2,3,4-tetrahydrophenanthrene, the product was an equimolar complex
of II and X which had to be disrupted with base. Condensation of
cyclohexanone with I (R = 11, R1 = C12H25; and R = R1 = Me)gave
2,4-diaminopyrimidines, m. 204-5°, 98-100°, and
135-6° in 56.3, 60.5, and 24.1% yields, resp. Condensation of I
with III (R3 = Ph, R4=Me; R3=Ph,R4=Et; R=PhCH2,R3= Me; R4= 1-cyclohexenyl,
R3 = Me; R4 = Me, R4 = Et; and R3 = H, R4 = Ph) gave 2,4-diamino-5,6-
disubstituted-pyrimidines (substituents, m.p., and % yield given): 5-Ph,
6-Me, 253-6°, 26.9; 5-Ph, 6-Et, 241-4°, 19.6; 5-PHCH2, 6-Me,
18890°, 25.3; 5-(1-cyclohexenyl), 6-Me, 249-51°, 7.2; 5-Me,
6-Et, 168-70°, 4.3; 5-H, 6-Ph, 164-5°, 32.2. Many of the
above derivs. behaved as highly effective antagonists of folic acid in
selected microbiol. systems.
IT Benzo[f]quinazoline, 2,4-diamino-5,10-dihydro-(?)
Benzo[f]quinazoline, 2,4-diamino-5,5a,6,7,8,9,9a,10-octahydro-, isomers
Quinazoline, 2,4-diamino-5,6,7,8-tetrahydro-5(or 7)-methyl-
IT 156-81-0, Pyrimidine, 2,4-diamino- 289-95-2, Pyrimidine
(derivs.)
IT 1899-39-4, 5H-Cyclopentapyrimidine, 2,4-diamino-6,7-dihydro- 1899-40-7,
Quinazoline, 2,4-diamino-5,6,7,8-tetrahydro- 1899-41-8, Quinazoline,
2,4-diamino-5,6,7,8-tetrahydro-6-methyl- 1899-42-9, Quinazoline,
4-amino-2-(dimethylamino)-5,6,7,8-tetrahydro- 1899-43-0,
5H-Cycloheptapyrimidine, 2,4-diamino-6,7,8,9-tetrahydro 1899-47-4,
5H-Cyclopentadecapyrimidine, 2,4-diamino-6,7,8,9,10,11,12,13,14,15,16,17-
dodecahydro- 1980-50-3, Quinazoline, 4-amino-5,6,7,8-tetrahydro-2-
(methylamino)- 1980-51-4, Quinazoline, 4-amino-2-(dodecylamino)-5,6,7,8-
tetrahydro- 3308-24-5, Pyrimidine, 2,4-diamino-6-phenyl- 18588-42-6,
Pyrimidine, 2,4-diamino-5-benzyl-6-methyl- 18588-50-6, Pyrimidine,
2,4-diamino-6-methyl-5-phenyl- 27653-49-2, Pyrimidine,
2,4-diamino-6-ethyl-5-phenyl- 33987-10-9, Benzo[h]quinazoline,
2,4-diamino-5,6-dihydro- 90000-44-5, Pyrimidine, 2,4-diamino-6-ethyl-5-
methyl- 93188-92-2, Pyrimidine, 2,4-diamino-5-(1-cyclohexen-1-yl)-6-
methyl- 97953-44-1, Naphtho[1,2-h]quinazoline, 1,3-diamino-11,12-dihydro-
(preparation of)

L19 ANSWER 20 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1962:462756 HCAPLUS
DN 57:62756

```
OREF 57:12481a-e
ED   Entered STN:  22 Apr 2001
TI   Reaction of 2-hydroxy-3-nitro-5,6-diphenylpyrazine with pyridine
AU   Ratajczyk, James D.; Carbon, John A.
CS   Abbott Labs., North Chicago
SO   Journal of Organic Chemistry (1962), 27, 2644-5
     CODEN: JOCEAH; ISSN: 0022-3263
DT   Journal
LA   Unavailable
CC   32 (Heterocyclic Compounds-More than One Hetero Atom)
AB   Treatment of 5,6-diphenyl-2-hydroxy-3-nitropyrazine (I) with SOCl2 gave
     3-chloro-5,6-diphenyl-2-hydroxypyrazine (II), and with POCl3 both II and
     2,3-dichloro-5,6diphenylpyrazine (Karmas and Spoerri, CA 48, 175e).  In an
     attempt to obtain normal replacement of the OH group without loss of the
     NO2 group, 15.0 g. I was treated with 6.0 g. SOCl2 in the presence of 150
     ml. dry C5H5N.  The mixture kept 18 hrs. before pouring into 335 ml. ice H2O
     and 165 ml. concentrated HCl and basifying with 45% aqueous KOH, the orange
precipitate
     washed with H2O and the strongly hydrated compound (13.2 g.) dried in vacuo
     at 100° gave hydrated material, recrystd. from PrOH to give III, m.
     above 260° (slow decomposition), showing no carbonyl peaks below 6.4
     μ, and containing no NO2 group (polarographic determination) III (2.0 g.) refluxed
     4 hrs. in 25 ml. 20% H2SO4 and the cooled mixture filtered gave 1.6 g.
     yellow cryst, solid, recrystd. from AcOH-H2O and dried in vacuo at
     100° gave 2,3-dihydroxy-5,6-diphenylpyrazine, m. 340-2°
     (capillary).  The filtrate basified with 50% aqueous NaOH and the filtered
     solution extracted 3 times with 10 ml. CHCl3, the dried extract concentrated and the
     residue distilled gave C5H5N.  II (1.2 g.) and 0.50 g. C5H5N.HCl refluxed 2
     hrs. in 15 ml. dry C5H5N and the cooled mixture poured into 100 ml. 2N HCl
     and cracked ice, the solution clarified with Norit and the filtered solution
     basified with 45% KOH gave 0.25 g. III.  I (3.0 g.) heated 1.5 hrs. at
     100° in 20 ml. C5H5N and poured into cold dilute HCl, the solution
     basified and the product crystallized from PrOH gave III.  Attempts to prepare
     III by treatment of II with C5H5N at 100° 2 hrs. or with C5H5N and
     C5H5N.HCl at 50-60° 2 hrs. gave only recovered II.
IT   32493-65-5, 2,3-Pyrazinediol, 5,6-diphenyl-   100025-56-7, Pyridinium,
     1-(3-hydroxy-5,6-diphenylpyrazinyl)-, hydroxide, inner salt
        (preparation of)
IT   110-86-1, Pyridine
        (reaction with 3-nitro-5,6-diphenylpyrazinol)
IT   25468-58-0, Pyrazinol, 3-nitro-5,6-diphenyl-
        (reaction with pyridine)
```

```
=> b hcao
FILE 'HCAOLD' ENTERED AT 17:58:00 ON 01 SEP 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

PRE-1967 CHEMICAL ABSTRACTS FILE WITH HOUR-BASED PRICING
FILE COVERS 1907-1966
FILE LAST UPDATED:  01 May 1997 (19970501/UP)

This file contains CAS Registry Numbers for easy and accurate
substance identification.  Title keywords, authors, patent
assignees, and patent information, e.g., patent numbers, are
now searchable from 1907-1966.  TIFF images of CA abstracts
printed between 1907-1966 are available in the PAGE
display formats.

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file supports REG1stRY for direct browsing and searching of
all substance data from the REGISTRY file.  Enter HELP FIRST for
more information.

=> d all l11 tot

L11  ANSWER 1 OF 1  HCAOLD  COPYRIGHT 2005 ACS on STN
AN   CA57:12481e  CAOLD
TI   pyrimidine derivs. - (III) sunthesis of 2,4-diaminopyrimidines
AU   Modest, Edward J.; Chatterjee, S.; Kangur, H.
IT   1899-39-4   1899-40-7   1899-41-8   1899-42-9   1899-43-0   1899-47-4
     1980-50-3   1980-51-4   18588-50-6  31096-21-6  33987-10-9  40041-19-8
     89491-28-1  95140-64-0  97953-44-1


=> b reg
FILE 'REGISTRY' ENTERED AT 17:58:56 ON 01 SEP 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2005 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES:    31 AUG 2005  HIGHEST RN 862246-83-1
DICTIONARY FILE UPDATES:   31 AUG 2005  HIGHEST RN 862246-83-1

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2005

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

*********************************************************************
*                                                                   *
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added,   *
* effective March 20, 2005.  A new display format, IDERL, is now    *
* available and contains the CA role and document type information. *
*                                                                   *
*********************************************************************

Structure search iteration limits have been increased.  See HELP SLIMITS
for details.

Experimental and calculated property data are now available. For more
```

```
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html

=> d ide can 120 tot

L20  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2005 ACS on STN
RN   95140-64-0  REGISTRY
ED   Entered STN:  09 Mar 1985
CN   5H-Indeno[1,2-d]pyrimidine-2,4-diamine (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   5H-Indeno[1,2-d]pyrimidine, 2,4-diamino- (7CI)
FS   3D CONCORD
MF   C11 H10 N4
CI   COM
LC   STN Files:   BEILSTEIN*, CA, CAOLD, CAPLUS, CHEMCATS
          (*File contains numerically searchable property data)
```



```
**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

               2 REFERENCES IN FILE CA (1907 TO DATE)
               2 REFERENCES IN FILE CAPLUS (1907 TO DATE)
               1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE   1:  134:204940

REFERENCE   2:  131:214250

=> b home
FILE 'HOME' ENTERED AT 17:59:06 ON 01 SEP 2005

=>
```